Genie®

Service Manual

Part No. 72863
Rev E
December 2004

GS™-3390
GS™-4390
GS™-5390

Important

Read, understand and obey the safety rules and operating instructions in the appropriate Operator's Manual on your machine before attempting any maintenance or repair procedure.

This manual provides detailed scheduled maintenance information for the machine owner and user. It also provides troubleshooting and repair procedures for qualified service professionals.

Basic mechanical, hydraulic and electrical skills are required to perform most procedures. However, several procedures require specialized skills, tools, lifting equipment and a suitable workshop. In these instances, we strongly recommend that maintenance and repair be performed at an authorized Genie dealer service center.

Technical Publications

Genie Industries has endeavored to deliver the highest degree of accuracy possible. However, continuous improvement of our products is a Genie policy. Therefore, product specifications are subject to change without notice.

Readers are encouraged to notify Genie of errors and send in suggestions for improvement. All communications will be carefully considered for future printings of this and all other manuals.

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Safety Rules

Danger

Failure to obey the instructions and safety rules in this manual and the appropriate Operator's Manual on your machine will result in death or serious injury.

Many of the hazards identified in the operator's manual are also safety hazards when maintenance and repair procedures are performed.

Do Not Perform Maintenance Unless:

- ☑ You are trained and qualified to perform maintenance on this machine.
- ☑ You read, understand and obey:
  - manufacturer's instructions and safety rules
  - employer's safety rules and worksite regulations
  - applicable governmental regulations
- ☑ You have the appropriate tools, lifting equipment and a suitable workshop.

SAFETY RULES

Personal Safety

Any person working on or around a machine must be aware of all known safety hazards. Personal safety and the continued safe operation of the machine should be your top priority.

Read each procedure thoroughly. This manual and the decals on the machine, use signal words to identify the following:

Safety alert symbol—used to alert personnel to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠DANGER Red—used to indicate the presence of an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING Orange—used to indicate the presence of a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠CAUTION Yellow with safety alert symbol—used to indicate the presence of a potentially hazardous situation which, if not avoided, may cause minor or moderate injury.

CAUTION Yellow without safety alert symbol—used to indicate the presence of a potentially hazardous situation which, if not avoided, may result in property damage.

NOTICE Green—used to indicate operation or maintenance information.

Be sure to wear protective eye wear and other protective clothing if the situation warrants it.

Be aware of potential crushing hazards such as moving parts, free swinging or unsecured components when lifting or placing loads. Always wear approved steel-toed shoes.

Workplace Safety

Be sure to keep sparks, flames and lighted tobacco away from flammable and combustible materials like battery gases and engine fuels. Always have an approved fire extinguisher within easy reach.

Be sure that all tools and working areas are properly maintained and ready for use. Keep work surfaces clean and free of debris that could get into machine components and cause damage.

Be sure that your workshop or work area is properly ventilated and well lit.

Be sure any forklift, overhead crane or other lifting or supporting device is fully capable of supporting and stabilizing the weight to be lifted. Use only chains or straps that are in good condition and of ample capacity.

Be sure that fasteners intended for one time use (i.e., cotter pins and self-locking nuts) are not reused. These components may fail if they are used a second time.

Be sure to properly dispose of old oil or other fluids. Use an approved container. Please be environmentally safe .

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Specifications

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Machine Specifications

Fluid capacities	
Hydraulic tank	32 gallons 121 liters
Hydraulic system (including tank)	35 gallons 132.5 liters
Fuel tank	30 gallons 114 liters

Tire and wheels	
Wheel lugs	9 @ 5/8-18
Lug nut torque, dry	125 ft-lbs 169.5 Nm
Lug nut torque, lubricated	94 ft-lbs 127.4 Nm

Rough Terrain, foam-filled	
Tire size	LSW 305-546 NHS
Tire ply rating	10
Tire contact area	36 sq in 232.3 cm^2
Tire diameter	33 in 83.8 cm
Tire width	12 in 30 cm
Wheel diameter	21.5 in 55 cm
Wheel width	10 in 25.4 cm
Weight	257 lbs ($^+$/- 10 lbs) 116.6 kg ($^+$/- 4.5 kg)

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High Flotation, foam-filled	
Tire size	33/16LL500
Tire ply rating	10
Tire contact area	48 sq in 309.7 cm^2
Tire diameter	33 in 83.8 cm
Tire width	16 in 41 cm
Wheel diameter	19.5 in 49.5 cm
Wheel width	14 in 35.6 cm
Weight	419 lbs ($^+$/- 10 lbs) 190 kg ($^+$/- 4.5 kg)

High Flotation, air-filled	
Tire size	33/16LL500
Tire ply rating	10
Tire contact area	48 sq in 309.7 cm^2
Tire diameter	33 in 83.8 cm
Tire width	16 in 41 cm
Wheel diameter	19.5 in 49.5 cm
Wheel width	14 in 35.6 cm
Weight	157 lbs 71.2 kg
Pressure	38 psi 2.6 bar

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Performance Specifications

Drive speed, maximum	
Platform stowed	5 mph 40 ft / 5.5 sec 8 km/h 12.2 m / 5.5 sec
Platform raised	0.7 mph 40 ft / 39 sec 1.13 km/h 12.2 m / 39 sec

Gradeability	
GS-3390 and GS-4390	50%
GS-5390	40%

Function speed, maximum from platform controls (with 1 person in platform)	
GS-3390	
Platform up	45 seconds
Platform down	29 seconds
GS-4390	
Platform up	45 seconds
Platform down	39 seconds
GS-5390	
Platform up	55 seconds
Platform down	49 seconds

Airborne noise emissions Maximum sound level at normal operation workstations (A-weighted)	80 dB

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Hydraulic Specifications

Hydraulic Oil Specifications

Before serial number GS9003-41223	
Hydraulic oil type	Shell Donax TG (Dexron III)

After serial number GS9003-41222	
Hydraulic oil type	Chevron Rykon MV equivalent
Approximate SAE grade	5W-20
Viscosity index rating	200

Chevron Rykon MV oil is fully compatible and mixable with Shell Donax TG (Dexron III) oils.
Genie specifications require hydraulic oils which are designed to give maximum protection to hydraulic systems, have the ability to perform over a wide temperature range, and have a minimum viscosity index rating of 150. They should provide excellent antiwear, oxidation, corrosion inhibition, seal conditioning, and foam and aeration suppression properties.

Optional fluids	
Biodegradable	Petro Canada Premium ECO 46 Statoil Hydra Way Bio Pa 32 BP Biohyd SE-S
Fire resistant	UCON Hydrolube HP-5046 Quintolubric 822
Mineral based	Shell Tellus T32 Shell Tellus T46 Chevron Aviation A

NOTICE Genie specifications require additional equipment and special installation instructions for the approved optional fluids. Consult the Genie Industries Service Department before use.

REV D SPECIFICATIONS

Drive pump	
Type: Bi-directional, variable displacement piston pump	
Flow rate @ 2500 rpm (before serial number GS9004-41619)	0 to 30 gpm 0 to 113.6 L/min
Flow rate @ 2500 rpm (after serial number GS9004-41618)	0 to 32.5 gpm 0 to 123 L/min
Drive pressure, maximum (before serial number GS9004-41619)	3500 psi 241 bar
Drive pressure, maximum (after serial number GS9004-41618)	3750 psi 258.6 bar

Charge pump	
Type:	Gerotor
Flow rate @ 2500 rpm (before serial number GS9004-41619)	6.5 gpm 24.6 L/min
Flow rate @ 2500 rpm (after serial number GS9004-41618)	9.1 gpm 34.4 L/min
Charge pump pressure (before serial number GS9004-41619)	360 psi 24.8 bar
Charge pump pressure (after serial number GS9004-41618)	325 psi 22.4 bar

Function pump	
Type:	Gear
Displacement (before serial number GS9004-41619)	1.025 cu in 16.8 cc
Displacement (after serial number GS9004-41618)	0.98 cu in 16 cc
Flow rate @ 2500 rpm (before serial number GS9004-41619)	10.8 gpm 40.9 L/min
Flow rate @ 2500 rpm (after serial number GS9004-41618)	10.6 gpm 40.1 L/min
Hydraulic tank return line filter	10 micron with 25 psi / 1.7 bar bypass

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Function manifold	
System relief valve pressure	3500 psi 241 bar
Steer relief valve pressure (before serial number 40519)	2000 psi 138 bar
Steer flow regulator (before serial number 40519)	2.5 gpm 9.5 L/min
Lift relief valve pressure (after serial number 40518)	2000 psi 138 bar
Proportional valve flow regulator (after serial number 40518)	0.1 gpm 0.38 L/min

Oscillate manifold	
System relief valve pressure	3500 psi 241 bar
Float relief valve pressure	900 psi 62 bar
Oscillate flow regulator	1 gpm 3.8 L/min

Drive manifold	
Hot oil relief pressure (before serial number GS9004-41619)	300 psi 20.7 bar
Hot oil relief pressure (after serial number GS9004-41618)	280 psi 19.3 bar

Drive motors	
Displacement (2 speed motor) (before serial number GS9004-41619)	0.6 to 1.5 cu in 9.8 to 24.6 cc
Displacement (2 speed motor) (after serial number GS9004-41618)	0.54 to 1.52 cu in 8.8 to 25 cc

Drive hubs	
Fluid capacity (before serial number GS9004-41619)	17 fl oz 0.5 liters
Fluid capacity (after serial number GS9004-41618)	26 fl oz 0.77 liters
Type:	SAE 90 multipurpose hypoid gear oil API service classification GL5

SPECIFICATIONS REV D

Manifold Component Specifications

Plug torque	
SAE No. 2	50 in-lbs / 6 Nm
SAE No. 4	13 ft-lbs / 18 Nm
SAE No. 6	18 ft-lbs / 24 Nm
SAE No. 8	50 ft-lbs / 68 Nm
SAE No. 10	55 ft-lbs / 75 Nm
SAE No. 12	75 ft-lbs / 102 Nm

Valve Coil Resistance	
Description	**Specification**
Solenoid valve, 3 position 4 way 10V DC with diode (schematic item G)	8.2 to 10.2Ω
Proportional valve, 12V DC (schematic items H, AD)	3.1 to 5.1Ω
DO3 valve, 3 position 4 way, 10V DC (schematic items I, J, AG and AK)	2.6 to 4.6Ω
Solenoid valve, 3 position 4 way 10V DC with diode (schematic item AH)	6.2 to 8.2Ω
Solenoid valve, 2 position 2 way 10V DC with diode (schematic items BA and BB)	5.7 to 7.7Ω
Solenoid valve, 2 position 3 way 10V (schematic items BI and BJ)	8.2 to 10.2Ω
Solenoid valve, 2 position 2 way 10V DC (schematic items CA, CB, CC and CD)	4.5 to 6.5Ω
Solenoid valve, 2 position 3 way 10V DC (schematic item AL)	5 to 7Ω
Solenoid valve, 2 position 2 way 12V DC with diode (schematic item DA)	6.5 to 8.5Ω
Solenoid valve, 2 position 3 way 12V DC with diode (schematic items DE and DF)	9 to 11Ω
Solenoid valve, 2 position 2 way 12V DC with diode (schematic item DG)	9 to 11Ω
Solenoid valve, 2 position 3 way 10V DC with diode (schematic items EF and EJ)	6 to 8Ω

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Ford LRG-425 EFI Engine

Displacement	153 cu in 2.5 liters
Number of cylinders	4
Bore & stroke	3.78 x 3.4 inches 96.01 x 86.36 mm
Horsepower	70 @ 2500 rpm 52 kw @ 2500 rpm
Firing order	1 - 3 - 4 - 2
Low idle (computer controlled)	1600 rpm 320 Hz
High idle (computer controlled)	2500 rpm 500 Hz
Compression ratio	9.4:1
Compression pressure (approx.) Pressure (psi or bar) of lowest cylinder must be at least 75% of highest cylinder	
Valve clearances - collapsed tappet	0.035 to 0.055 inches 0.889 to 1.397 mm
Lubrication system	
Oil pressure (operating temperature @ 2500 rpm)	40 to 60 psi 2.75 to 4.1 bar
Oil capacity (including filter)	4.5 quarts 4.3 liters
Oil viscosity requirements	
Above -15°F / -26°C	10W-40
Above -22°F / -30°C	5W-30
Use oils meeting API classification SJ or SH. Units ship with 15W-40 SJ.	
Ignition system	
Spark plug type (before serial number GS9004-41694)	Motorcraft AWSF-52-C
Spark plug type (after serial number GS9004-41693)	Motorcraft AGSF-32-FM
Spark plug gap	0.042 to 0.046 inches 1.07 to 1.17 mm
Engine coolant	
Capacity	11.5 quarts 10.9 liters
Starter motor	
Normal engine cranking speed	200 to 250 rpm
Current draw, normal load	140-200A
Current draw, maximum load	800A
Circuit voltage drop while starting, maximum (normal temperature)	0.5V DC
Brush length, minimum	0.25 in 6.35 mm
Commutator run-out, maximum	0.005 inches 0.127 mm
Electronic fuel pump	
Fuel pressure, static	63 psi 4.3 bar
Fuel flow rate	0.58 gpm 2.2 L/min
Alternator	
Output	95A, 14.5V DC
Battery (before serial number 40516)	
Type	12V DC
Group	34/78
Quantity	1
Cold cranking ampere	900A
Reserve capacity @ 25A rate	125 minutes
Battery (after serial number 40515)	
Type	12V DC
Group	31
Quantity	1
Cold cranking ampere @ 0°F	1000A
Reserve capacity @ 25A rate	200 minutes

SPECIFICATIONS REV D

Deutz F4L 1011F Engine

Displacement	166.7 cu in 2.732 liters
Number of cylinders	4
Bore and stroke	3.58 x 4.13 inches 91 x 105 mm
Horsepower	56 @ 3000 rpm 42 kw @ 3000 rpm
Firing order	1 - 3 - 4 - 2
Compression ratio	18.5:1
Compression pressure	362 to 435 psi 25 to 30 bar
Low idle	1600 rpm 320 Hz
High idle	2500 rpm 500 Hz
Governor	centrifugal mechanical
Valve clearance, cold	
Intake	0.012 in 0.3 mm
Exhaust	0.020 in 0.5 mm
Lubrication system	
Oil pressure	26 to 87 psi 1.8 to 6 bar
Oil capacity (including filter)	11 quarts 10.4 liters
Oil viscosity requirements	
Below 60°F / 15.5°C	5W-30 (synthetic)
-10°F to 90°F / -23°C to 32°C	10W-40
Above -4°F / -20°C	15W-40
Engine oil should have properties of API classification CC-SE or CC-SF. Units ship with 15W-40 CC/SG.	

Injection system	
Injection pump make	OMAP
Injection pump pressure	4351 psi 300 bar
Injector opening pressure	3626 psi 250 bar
Fuel requirement	diesel number 2-D
Starter motor	
Current draw, no load	90A
Brush length, minimum	0.5 in 12.7 mm
Alternator	
Output	55A, 14V DC
Fan belt deflection	3/8 to 1/2 inch 9 to 12 mm
Battery (before serial number 40516)	
Type	12V DC
Group	34/78
Quantity	1
Cold cranking ampere	900A
Reserve capacity @ 25A rate	125 minutes
Battery (after serial number 40515)	
Type	12V DC
Group	31
Quantity	1
Cold cranking ampere @ 0°F	1000A
Reserve capacity @ 25A rate	200 minutes

Deutz F3L 1011F Engine

Displacement	125 cu in 2.05 liters
Number of cylinders	3
Bore and stroke	3.58 x 4.13 inches 91 x 105 mm
Horsepower	42 @ 2800 rpm 31.3 kW @ 2800 rpm
Firing order	1 - 2 - 3
Compression ratio	18.5:1
Compression pressure	362 to 435 psi 25 to 30 bar
Low idle	1600 rpm 320 Hz
High idle	2800 rpm 560 Hz
Governor	centrifugal mechanical
Valve clearance, cold	
Intake	0.012 in 0.3 mm
Exhaust	0.020 in 0.5 mm
Lubrication system	
Oil pressure	26 to 87 psi 1.8 to 6.0 bar
Oil capacity (including filter)	8.5 quarts 8 liters
Oil viscosity requirements	
Below 60°F / 15.5°C	5W-30 (synthetic)
-10°F to 90°F / -23°C to 32°C	10W-40
Above -4°F / -20°C	15W-40
Engine oil should have properties of API classification CC-SE or CC-SF. Units ship with 15W-40 CC/SG.	

Injection system	
Injection pump make	OMAP
Injection pump pressure	4351 psi 300 bar
Injector opening pressure	3626 psi 250 bar
Fuel requirement	diesel number 2-D
Starter motor	
Current draw, no load	90A
Brush length, new	0.748 in 19 mm
Brush length, minimum	0.5 in 12.7 mm
Alternator	
Output	55A, 14V DC
Fan belt deflection	3/8 to 1/2 inch 9 to 12 mm
Battery (before serial number 40516)	
Type	12V DC
Group	34/78
Quantity	1
Cold cranking ampere	900A
Reserve capacity @ 25A rate	125 minutes
Battery (after serial number 40515)	
Type	12V DC
Group	31
Quantity	1
Cold cranking ampere @ 0°F	1000A
Reserve capacity @ 25A rate	200 minutes

SPECIFICATIONS REV D

Deutz F3L 2011F Engine

Displacement	142.2 cu in 2.331 liters
Number of cylinders	3
Bore and stroke	3.7 x 4.41 inches 94 x 112 mm
Horsepower	48 @ 2800 rpm 35.8 kW @ 2800 rpm
Firing order	1 - 2 - 3
Compression ratio	19:1
Low idle	1500 rpm 300 Hz
High idle	2500 rpm 500 Hz
Governor	centrifugal mechanical
Valve clearance, cold	
Intake	0.012 to 0.016 in 0.3 to 0.4 mm
Exhaust	0.02 to 0.024 in 0.5 to 0.6 mm
Lubrication system	
Oil pressure	20 to 43 psi 1.4 to 3 bar
Oil capacity (including filter)	8.5 quarts 8 liters
Oil change capacity (including filter)	6.35 quarts 6 liters
Oil viscosity requirements	
Above 5°F / -15°C	15W-40
From -22°F to 86°F / -30°C to 30°C	5W-30
Engine oil should have properties of API classification CC-SE or CC-SF. Units ship with 15W-40 CC/SG.	

Injection system	
Injection pump make	Motorpal
Injector pressure, minimum	4351 psi 300 bar
Fuel requirement	diesel number 2-D
Starter motor	
Current draw, no load	90A
Brush length, minimum	0.5 in 12.7 mm
Alternator	
Output	55A, 14V DC
Fan belt (pretension / retension)	101 / 79 ±5 lbf 450 / 350 ±20 N
Battery	
Type	12V DC
Group	31
Quantity	1
Cold cranking ampere @ 0°F	1000A
Reserve capacity @ 25A rate	200 minutes

Hydraulic Hose and Fitting Torque Specifications

Your machine is equipped with Parker Seal-Lok® fittings and hose ends. Genie specifications require that fittings and hose ends be torqued to specification when they are removed and installed or when new hoses or fittings are installed.

SAE O-ring Boss Port
(tube fitting - installed into Aluminum)

SAE Dash size	Torque
-4	11 ft-lbs / 14.9 Nm
-6	23 ft-lbs / 31.2 Nm
-8	40 ft-lbs / 54.2 Nm
-10	69 ft-lbs / 93.6 Nm
-12	93 ft-lbs / 126.1 Nm
-16	139 ft-lbs / 188.5 Nm
-20	172 ft-lbs / 233.2 Nm
-24	208 ft-lbs / 282 Nm

SAE O-ring Boss Port
(tube fitting - installed into Steel)

SAE Dash size	Torque
-4	16 ft-lbs / 21.7 Nm
-6	35 ft-lbs / 47.5 Nm
-8	60 ft-lbs / 81.3 Nm
-10	105 ft-lbs / 142.4 Nm
-12	140 ft-lbs / 190 Nm
-16	210 ft-lbs / 284.7 Nm
-20	260 ft-lbs / 352.5 Nm
-24	315 ft-lbs / 427.1 Nm

Seal-Lok® fittings

1 Replace the O-ring. The O-ring must be replaced anytime the seal has been broken. The O-ring cannot be re-used if the fitting or hose end has been tightened beyond finger tight.

NOTICE The O-rings used in the Parker Seal Lok® fittings and hose ends are custom-size O-rings. They are not standard SAE size O-rings. They are available in the O-ring field service kit (Genie part number 49612).

2 Lubricate the O-ring before installation.

3 Be sure that the face seal O-ring is seated and retained properly.

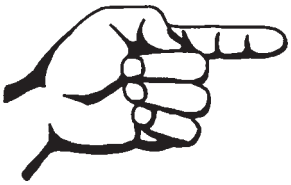
4 Position the tube and nut squarely on the face seal end of the fitting and tighten the nut finger tight.

5 Tighten the nut or fitting to the appropriate torque per given size as shown in the table.

6 Operate all machine functions and inspect the hoses and fittings and related components to confirm that there are no leaks.

Seal-Lok® Fittings
(hose end)

SAE Dash size	Torque
-4	18 ft-lbs / 24.4 Nm
-6	27 ft-lbs / 36.6 Nm
-8	40 ft-lbs / 54.2 Nm
-10	63 ft-lbs / 85.4 Nm
-12	90 ft-lbs / 122 Nm
-16	120 ft-lbs / 162.7 Nm
-20	140 ft-lbs / 190 Nm
-24	165 ft-lbs / 223.7 Nm



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Scheduled Maintenance Procedures

Observe and Obey:

- ☑ Maintenance inspections shall be completed by a person trained and qualified on the maintenance of this machine.
- ☑ Scheduled maintenance inspections shall be completed daily, quarterly, semi-annually, annually and every 2 years as specified on the *Maintenance Inspection Report.*
- **⚠WARNING** Failure to perform each procedure as presented and scheduled could result in death, serious injury or substantial damage.
- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating the machine.
- ☑ Keep records on all inspections for three years.
- ☑ Machines that have been out of service for a period longer than 3 months must complete the quarterly inspection.
- ☑ Unless otherwise specified, perform each maintenance procedure with the machine in the following configuration:
  - · Machine parked on a firm, level surface
  - · Platform in the stowed position
  - · Key switch in the off position with the key removed
  - · The red Emergency Stop button in the off position at both ground and platform controls
  - · Wheels chocked
  - · All external AC power supply disconnected from the machine

About This Section

This section contains detailed procedures for each scheduled maintenance inspection.

Each procedure includes a description, safety warnings and step-by-step instructions.

Symbols Legend

Safety alert symbol—used to alert personnel to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠DANGER Used to indicate the presence of an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING Used to indicate the presence of a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠CAUTION With safety alert symbol—used to indicate the presence of a potentially hazardous situation which, if not avoided, may cause minor or moderate injury.

CAUTION Without safety alert symbol—used to indicate the presence of a potentially hazardous situation which, if not avoided, may result in property damage.

NOTICE Used to indicate operation or maintenance information.

⊙ Indicates that a specific result is expected after performing a series of steps.

⊠ Indicates that an incorrect result has occurred after performing a series of steps.

SCHEDULED MAINTENANCE PROCEDURES

Maintenance Symbols Legend

NOTICE The following symbols have been used in this manual to help communicate the intent of the instructions. When one or more of the symbols appear at the beginning of a maintenance procedure, it conveys the meaning below.

Indicates that tools will be required to perform this procedure.

Indicates that new parts will be required to perform this procedure.

Indicates that a cold engine will be required to perform this procedure.

Indicates that a warm engine will be required to perform this procedure.

Indicates that dealer service will be required to perform this procedure.

Pre-delivery Preparation Report

The pre-delivery preparation report contains checklists for each type of scheduled inspection.

Make copies of the *Pre-delivery Preparation* report to use for each inspection. Store completed forms as required.

Maintenance Schedule

There are five types of maintenance inspections that must be performed according to a schedule—daily, quarterly, semi-annually, annually, and two year. The *Scheduled Maintenance Procedures Section and the Maintenance Inspection Report* have been divided into five subsections—A, B, C, D, and E. Use the following chart to determine which group(s) of procedures are required to perform a scheduled inspection.

Inspection	Checklist
Daily or every 8 hours	A
Quarterly or every 250 hours	A + B
Semi-annually or every 500 hours	A + B + C
Annually or every 1000 hours	A + B + C + D
Two year or every 2000 hours	A + B + C + D + E

Maintenance Inspection Report

The maintenance inspection report contains checklists for each type of scheduled inspection.

Make copies of the *Maintenance Inspection Report* to use for each inspection. Store completed forms for three years.

Pre-Delivery Preparation

Fundamentals

It is the responsibility of the dealer to perform the Pre-delivery Preparation.

The Pre-delivery Preparation is performed prior to each delivery. The inspection is designed to discover if anything is apparently wrong with a machine before it is put into service.

A damaged or modified machine must never be used. If damage or any variation from factory delivered condition is discovered, the machine must be tagged and removed from service.

Repairs to the machine may only be made by a qualified service technician, according to the manufacturer's specifications.

Scheduled maintenance inspections shall be performed by qualified service technicians, according to the manufacturer's specifications and the requirements listed in the responsibilities manual.

Instructions

Use the operator's manual on your machine.

The Pre-delivery Preparation consists of completing the Pre-operation Inspection, the Maintenance items and the Function Tests.

Use this form to record the results. Place a check in the appropriate box after each part is completed. Follow the instructions in the operator's manual.

If any inspection receives an N, remove the machine from service, repair and re-inspect it. After repair, place a check in the R box.

Legend

Y = yes, completed
N = no, unable to complete
R = repaired

Comments

Pre-Delivery Preparation	Y	N	R
Pre-operation inspection completed			
Maintenance items completed			
Function tests completed			

Model

Serial number

Date

Machine owner

Inspected by (print)

Inspector signature

Inspector title

Inspector company

Genie Industries USA
18340 NE 76th Street
PO Box 97030
Redmond, WA 98073-9730
(425) 881-1800

Genie UK
The Maltings, Wharf Road
Grantham, Lincolnshire
NG31- 6BH England
(44) 1476-584333

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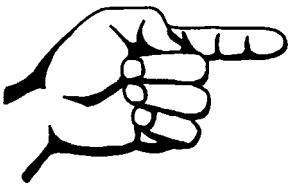

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Maintenance Inspection Report

Model

Serial number

Date

Hour meter

Machine owner

Inspected by (print)

Inspector signature

Inspector title

Inspector company

Instructions

- Make copies of this report to use for each inspection.
- Select the appropriate checklist(s) for the type of inspection to be performed.

☐	**Daily or 8 hour Inspection:**	**A**
☐	**Quarterly or 250 hour Inspection:**	**A+B**
☐	**Semi-annually or 500 hour Inspection:**	**A+B+C**
☐	**Annually or 1000 hour Inspection:**	**A+B+C+D**
☐	**2 Year or 2000 hour Inspection:**	**A+B+C+D+E**

- Place a check in the appropriate box after each inspection procedure is completed.
- Use the step-by-step procedures in this section to learn how to perform these inspections.
- If any inspection receives an “N”, tag and remove the machine from service, repair and re-inspect it. After repair, place a check in the “R” box.

Legend

Y = yes, acceptable

N = no, remove from service

R = repaired

Comments

Checklist A - Rev C		**Y**	**N**	**R**
A-1	Pre-operation inspect			
A-2	Function tests			
A-3	Engine maintenance - Ford models			
A-4	Engine maintenance - Deutz models			
Perform after 40 hours:				
A-5	Engine air filter			
A-6	30 day service			
Perform after 50 hours:				
A-7	Engine maintenance - Deutz models			
Perform every 100 hours:				
A-8	Engine maintenance - Ford models			
A-9	Filter condition indicator			
Perform every 125 hours:				
A-10	Engine maintenance - Deutz 1011F models			
Perform every 200 hours:				
A-11	Filter/separator - Deutz models			
A-12	Engine maintenance - Ford models			

Checklist B - Rev D		**Y**	**N**	**R**
B-1	Battery			
B-2	Electrical wiring			
B-3	Engine maintenance - Deutz 1011F models			
B-4	Exhaust system			
B-5	Engine air filter			
B-6	Engine RPM			
B-7	Brake configuration			
B-8	Tires and wheels			
B-9	Drive hub oil level			
B-10	Key switch			
B-11	Emergency Stop			
B-12	Horn			
B-13	Fuel select - Ford models			
B-14	Drive brakes			
B-15	Drive speed - stowed			
B-16	Drive speed - raised			
B-17	Hydraulic oil analysis			
B-18	Pressure filters			

Checklist B, continued		**Y**	**N**	**R**
B-19	Fuel tank cap venting			
Perform every 400 hours:				
B-20	Engine maintenance - Ford models			

Checklist C - Rev C		**Y**	**N**	**R**
C-1	Platform overload (if equipped)			
C-2	Engine maintenance - Deutz models			
Perform every 800 hours:				
C-3	Engine maintenance - Ford models			

Checklist D - Rev D		**Y**	**N**	**R**
D-1	Scissor arm wear pads			
D-2	Free-wheel configuration			
D-3	Drive hub oil			
D-4	Filter/separator - Deutz models			
D-5	Platform overload (if equipped)			
D-6	Hydraulic filter			
Perform every 1000 hours:				
D-7	Engine maintenance - Deutz models			

Checklist E - Rev C		**Y**	**N**	**R**
E-1	Test or replace hydraulic oil			
Perform every 2000 hours:				
E-2	Engine maintenance Deutz 1011F models -			
Perform every 2400 hours:				
E-3	Engine maintenance - Ford models			
Perform every 3000 hours:				
E-4	Engine maintenance - Deutz models			
Perform every 12,000 hours:				
E-5	Engine maintenance - Deutz 2011F models			
Perform every 4 years:				
E-6	Engine maintenance - Ford models			

Checklist A Procedures

REV C

A-1
Perform Pre-operation Inspection

Completing a Pre-operation Inspection is essential to safe machine operation. The Pre-operation Inspection is a visual inspection performed by the operator prior to each work shift. The inspection is designed to discover if anything is apparently wrong with a machine before the operator performs the function tests. The Pre-operation Inspection also serves to determine if routine maintenance procedures are required.

Complete information to perform this procedure is available in the appropriate operator's manual. Refer to the Operator's Manual on your machine.

A-2
Perform Function Tests

Completing the function tests is essential to safe machine operation. Function tests are designed to discover any malfunctions before the machine is put into service. A malfunctioning machine must never be used. If malfunctions are discovered, the machine must be tagged and removed from service.

Complete information to perform this procedure is available in the appropriate operator's manual. Refer to the Operator's Manual on your machine.

REV C CHECKLIST A PROCEDURES

A-3
Perform Engine Maintenance - Ford Models

NOTICE Engine specifications require that this procedure be performed every 8 hours or daily, whichever comes first.

Required maintenance procedures and additional engine information is available in the *Ford LRG425 Operator Handbook* (Ford part number FPP 194-302).

Ford LRG 425 Operator Handbook	
Genie part number	84792

A-4
Perform Engine Maintenance - Deutz Models

NOTICE Engine specifications require that this procedure be performed every 8 hours or daily, whichever comes first.

Required maintenance procedures and additional engine information is available in the *Deutz 1011F Operation Manual* (Deutz part number 0297 9683) or the *Deutz 2011 Operation Manual* (Deutz part number 0297 9929).

Deutz 1011F Operation Manual	
Genie part number	52883

Deutz 2011 Operation Manual	
Genie part number	84794

CHECKLIST A PROCEDURES REV C

A-5
Inspect the Engine Air Filter

NOTICE Genie specifications require that this procedure be performed every 40 hours or weekly, whichever comes first.

Maintaining the engine air filter in good condition is essential to good engine performance and service life. Failure to perform this procedure can lead to poor engine performance and component damage.

NOTICE Perform this procedure with the engine off.

Ford models:

1 Release the latches on the engine tray and fully slide the engine tray out.

2 Insert a 6 inch / 15 cm screwdriver or rod into the engine tray lock hole located near the engine tray roller wheels to prevent the engine tray from moving.

3 Remove the retaining ring from the end cap of the air filter canister.

4 Remove the end cap from the air cleaner canister.

5 Remove the air filter retaining fastener. Remove the air filter element.

6 Clean the inside of the canister and the gasket with a damp cloth.

7 Inspect the air filter element. If needed, blow from the inside out using low pressure dry compressed air, or carefully tap out dust.

8 Install the filter element.

9 Install the air filter canister end cap and the end cap retaining ring.

Deutz models:

1 Release the latches on the engine tray and fully slide the engine tray out.

2 Insert a 6 inch / 15 cm screwdriver or rod into the engine tray lock hole located near the engine tray roller wheels to prevent the engine tray from moving.

3 Remove the air intake hose from the engine slide out tray.

4 Disconnect the retaining clamp from the air cleaner canister.

5 Remove the filter element.

6 Clean the inside of the canister and the gasket with a damp cloth.

7 Inspect the air filter element. If needed, blow from the inside out using low pressure dry compressed air, or carefully tap out dust.

8 Install the filter element.

9 Install the air filter canister end cap and connect the end cap retaining clamp.

NOTICE Be sure the air cleaner intake hose is inserted in the hole in the front of the engine slide out tray.

REV C CHECKLIST A PROCEDURES

A-6
Perform 30 Day Service

The 30 day maintenance procedure is a one-time sequence of procedures to be performed after the first 30 days or 40 hours of usage. After this interval, refer to the maintenance checklists for continued scheduled maintenance.

1 Perform the following maintenance procedures:

Ford models:

- B-7 Inspect the Tires and Wheels (including lug nut torque)
- B-20 Perform Engine Maintenance - Ford Models
- D-6 Replace the Hydraulic Tank Return Filter

Deutz models:

- B-7 Inspect the Tires and Wheels (including lug nut torque)
- C-2 Perform Engine Maintenance - Deutz Models
- D-4 Replace the Fuel Filter/Water Separator - Deutz Models
- D-6 Replace the Hydraulic Tank Return Filter

A-7
Perform Engine Maintenance - Deutz Models

NOTICE Engine specifications require that this one-time procedure be performed after 50 hours of operation.

Required maintenance procedures and additional engine information is available in the *Deutz 1011F Operation Manual* (Deutz part number 0297 9683) or the *Deutz 2011 Operation Manual* (Deutz part number 0297 9929).

Deutz 1011F Operation Manual	
Genie part number	52883
Deutz 2011 Operation Manual	
Genie part number	84794

CHECKLIST A PROCEDURES REV C

A-8
Perform Engine Maintenance - Ford Models

NOTICE Engine specifications require that this procedure be performed every 100 hours or quarterly, whichever comes first.

Required maintenance procedures and additional engine information is available in the *Ford LRG425 Operator Handbook* (Ford part number FPP 194-302).

Ford LRG 425 Operator Handbook	
Genie part number	84792

A-9
Check the Hydraulic Return Filter Condition Indicator (if equipped)

NOTICE Genie specifications require that this procedure be performed every 100 hours of operation.

Maintaining the hydraulic return filter in good condition is essential to good system performance and safe machine operation. The filter condition indicator will show when the hydraulic flow is bypassing a clogged filter. If the filter is not frequently checked and replaced, impurities will remain in the hydraulic system and cause component damage.

NOTICE In extreme cold conditions, 20°F / -6°C and below, warm the engine for 5 minutes before operating to prevent hydraulic system damage.

1 Start the engine from the platform controls.

2 Press the high idle button at the platform controls to allow the engine to run at high idle.

3 Open the function manifold tray door and locate the hydraulic tank return filter behind the entry ladder.

4 Inspect the filter condition indicator gauge.

⊙ Result: The needle on the gauge should be operating in the *green* area. If the needle is in the *red* area, this indicates that the hydraulic filter is being bypassed and the filter should be replaced. See B-18, *Replace the Hydraulic Tank Return Filter.*

REV C CHECKLIST A PROCEDURES

A-10
Perform Engine Maintenance - Deutz 1011F Models

NOTICE Engine specifications require that this procedure be performed every 125 hours or quarterly, whichever comes first.

Required maintenance procedures and additional engine information is available in the *Deutz 1011F Operation Manual* (Deutz part number 0297 9683).

Deutz 1011F Operation Manual	
Genie part number	52883

A-11
Drain the Fuel Filter/ Water Separator - Deutz Models

NOTICE Genie specifications require that this procedure be performed every 200 hours or monthly, whichever comes first.

Proper maintenance of the fuel filter/water separator is essential for good engine performance. Failure to perform this procedure can lead to poor engine performance and component damage.

⚠DANGER Explosion and fire hazard. Engine fuels are combustible. Perform this procedure in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

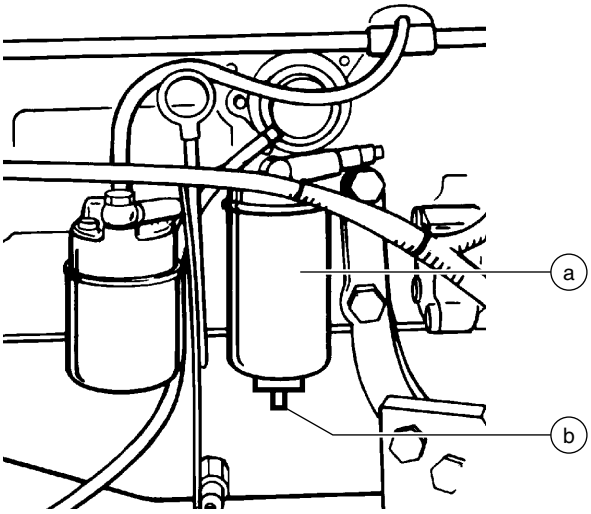
NOTICE Perform this procedure with the engine off.

1 Release the latches on the engine tray and fully slide the engine tray out.

2 Insert a 6 inch / 15 cm screwdriver or rod into the engine tray lock hole located near the engine tray roller wheels to prevent the engine tray from moving.

CHECKLIST A PROCEDURES REV C

3 Loosen the drain plug located at the bottom of the filter. Allow the water to drain into a suitable container until fuel starts to come out. Immediately tighten the drain plug.



a fuel filter
b drain plug

4 Clean up any fuel that may have spilled.

5 Start the engine from the ground controls and check the fuel filter/water separator for leaks.

⚠DANGER Explosion and fire hazard. If a fuel leak is discovered, keep any additional personnel from entering the area and do not operate the machine. Repair the leak immediately.

A-12
Perform Engine Maintenance - Ford Models

NOTICE Engine specifications require that this procedure be performed every 200 hours or quarterly, whichever comes first.

Required maintenance procedures and additional engine information is available in the *Ford LRG425 Operator Handbook* (Ford part number FPP 194-302).

Ford LRG 425 Operator Handbook	
Genie part number	84792

Checklist B Procedures

REV D

B-1
Inspect the Battery

Proper battery condition is essential to good engine performance and operational safety. Improper fluid levels or damaged cables and connections can result in engine component damage and hazardous conditions.

⚠WARNING Electrocution hazard. Contact with hot or live circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

⚠WARNING Bodily injury hazard. Batteries contain acid. Avoid spilling or contacting battery acid. Neutralize battery acid spills with baking soda and water.

NOTICE Perform this test after fully charging the battery.

NOTICE For a more accurate determination of battery condition, fully charge the battery and allow the battery to rest 24 hours before performing this procedure to allow the battery cells to equalize.

1 Put on protective clothing and eye wear.

2 Be sure that the battery cable connections are free of corrosion.

NOTICE Adding terminal protectors and a corrosion preventative sealant will help eliminate corrosion on the battery terminals and cables.

3 Be sure that the battery hold downs and cable connections are tight.

Models without maintenance-free or sealed batteries:

4 Remove the battery vent caps and check the specific gravity of each battery cell with a hydrometer.

⊙ Result: If any battery cell displays a specific gravity of less than 1.026, the battery must be replaced.

5 Check the battery acid level of each battery cell. If needed, replenish with distilled water to the bottom of the battery fill tube. Do not overfill.

6 Install the battery vent caps.

CHECKLIST B PROCEDURES REV D

B-2
Inspect the Electrical Wiring

Maintaining electrical wiring in good condition is essential to safe operation and good machine performance. Failure to find and replace burnt, chafed, corroded or pinched wires could result in unsafe operating conditions and may cause component damage.

⚠WARNING Electrocution hazard. Contact with hot or live circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

1 Inspect the underside of the chassis for damaged or missing ground strap(s).

2 Inspect the following areas for burnt, chafed, corroded and loose wires:

- Ground control panel
- Hydraulic power unit module tray
- Battery pack module tray
- Scissor arms
- Platform controls

3 Inspect for a liberal coating of dielectric grease in the following locations:

- Between the ECM and platform controls
- Engine ECM (Ford models)
- All wire harness connectors
- Level sensor

4 Turn the key switch to ground control and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

5 Start the engine from the ground controls and raise the platform approximately 18 feet / 5.5 m from the ground.

6 **Before serial number 40351:** Release the safety arm latch, lift the safety arm and rotate down to a vertical position.
After serial number 40350: Release the safety arm latch, lift the safety arm and rotate to a vertical position. Lock the safety arm in position.

NOTICE Be sure that the safety arm is locked in the vertical position.

7 Lower the platform onto the safety arm. Stop the engine.

⚠WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

8 Inspect the center chassis area and scissor arms for burnt, chafed and pinched cables.

9 Inspect the following areas for burnt, chafed, corroded, pinched and loose wires:

- Scissor arms
- ECM to platform controls
- Power to platform wiring
- Engine

10 Inspect for a liberal coating of dielectric grease in all connections between the ECM and the platform controls.

11 Raise the platform and return the safety arm to the stowed position.

12 Lower the platform to the stowed position and turn the machine off.

REV D CHECKLIST B PROCEDURES

B-3
Perform Engine Maintenance - Deutz 1011F Models

NOTICE Engine specifications require that this procedure be performed every 250 hours or quarterly, whichever comes first.

Required maintenance procedures and additional engine information is available in the *Deutz 1011F Operation Manual* (Deutz part number 0297 9683).

Deutz 1011F Operation Manual	
Genie part number	52883

B-4
Check the Exhaust System

Maintaining the exhaust system is essential to good engine performance and service life. Running the engine with a damaged or leaking exhaust system can cause component damage and unsafe operating conditions.

⚠WARNING Bodily injury hazard. Do not inspect while the engine is running. Remove the key to secure from operation.

⚠CAUTION Bodily injury hazard. Beware of hot engine components. Contact with hot engine components may cause severe burns.

1 Release the latches on the engine tray and fully slide the engine tray out.

2 Insert a 6 inch / 15 cm screwdriver or rod into the engine tray lock hole located near the engine tray roller wheels to prevent the engine tray from moving.

3 Be sure that all fasteners are tight.

4 Inspect all welds for cracks.

5 Inspect for exhaust leaks; i.e., carbon buildup around seams and joints.

CHECKLIST B PROCEDURES REV D

B-5
Replace the Engine Air Filter Element

NOTICE Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first. Perform this procedure more often if dusty conditions exist.

Maintaining the engine air filter in good condition is essential to good engine performance and service life. Failure to perform this procedure can lead to poor engine performance and component damage.

NOTICE Perform this procedure with the engine off.

Ford models:

1 Release the latches on the engine tray and fully slide the engine tray out.

2 Insert a 6 inch / 15 cm screwdriver or rod into the engine tray lock hole located near the engine tray roller wheels to prevent the engine tray from moving.

3 Remove the retaining ring from the end cap of the air filter canister.

4 Remove the end cap from the air cleaner canister.

5 Remove the air filter retaining fastener. Remove the air filter element.

6 Clean the inside of the canister and the gasket with a damp cloth.

7 Install the new filter element.

8 Install the air filter canister end cap and the end cap retaining ring.

Deutz models:

1 Release the latches on the engine tray and fully slide the engine tray out.

2 Insert a 6 inch / 15 cm screwdriver or rod into the engine tray lock hole located near the engine tray roller wheels to prevent the engine tray from moving.

3 Remove the air intake hose from the engine slide out tray.

4 Disconnect the retaining clamp from the air cleaner canister.

5 Remove the filter element.

6 Clean the inside of the canister and the gasket with a damp cloth.

7 Install the new filter element.

8 Install the air filter canister end cap and connect the end cap retaining clamp.

NOTICE Be sure the air cleaner intake hose is inserted in the hole in the front of the engine slide out tray.

B-6
Check and Adjust the Engine RPM

Maintaining the engine rpm at the proper setting for both low and high idle is essential to good engine performance and service life. The machine will not operate properly if the rpm is incorrect and continued use may cause component damage.

NOTICE The on-board self diagnostics incorporate a built-in engine tachometer. The first two digits of the engine RPM are displayed on the diagnostic display when the start toggle switch is moved to the START position with the engine running. Engine RPM equals the first two digits multiplied by 100.

NOTICE Perform this procedure after warming the engine to normal operating temperature.

Ford models:

NOTICE The engine rpm is controlled by the ECM and can only be adjusted by re-programming the ECM. If rpm adjustment or service is required, please contact the Genie Industries Service Department OR your local Ford dealer.

Deutz models:

1 Start the engine from the ground controls.

2 **Before serial number GS9004-41523:** Move and hold the start toggle switch to the start position and check the engine RPM on the diagnostic display. Refer to Section 2, *Specifications.*

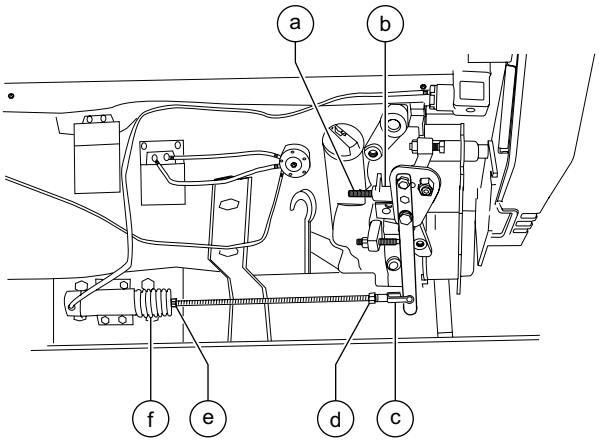
After serial number GS9004-41522: Press and hold the start button and check the engine RPM on the diagnostic display. Refer to Section 2, *Specifications.*

Skip to step 6 if the low idle rpm is correct.

3 Release the latches on the engine tray and fully slide the engine tray out.

4 Insert a 6 inch / 15 cm screwdriver or rod into the engine tray lock hole located near the engine tray roller wheels to prevent the engine tray from moving.

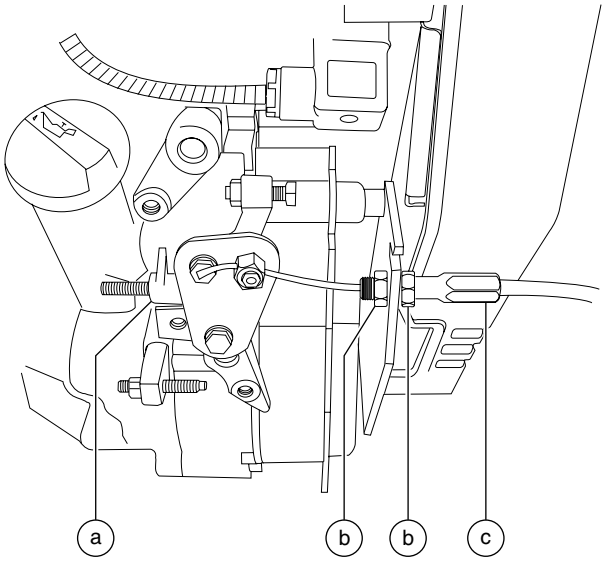
5 Loosen the low idle lock nut and turn the low idle adjustment screw clockwise to increase the rpm, or counterclockwise to decrease the rpm. Tighten the low idle lock nut and repeat step 2.



Deutz models with throttle linkage

a low idle adjustment screw
b low idle lock nut
c yoke
d yoke lock nut
e high idle adjustment lock nuts
f solenoid boot

CHECKLIST B PROCEDURES REV D



Deutz models with throttle cable

a low idle adjustment lock nut
b high idle adjustment lock nuts
c cable sheath

6 **Before serial number GS9004-41523:** Move the rpm select toggle switch to the high idle (rabbit symbol) position.

After serial number GS9004-41522: Press the high idle (rabbit symbol) button.

7 **Before serial number GS9004-41523:** Move and hold the start toggle switch to the start position and check the engine rpm on the diagnostic display. Refer to Section 2, *Specifications.*

After serial number GS9004-41522: Press and hold the start button and check the engine rpm on the diagnostic display. Refer to Section 2, *Specifications.*

Skip to step 11 if the high idle rpm is correct.

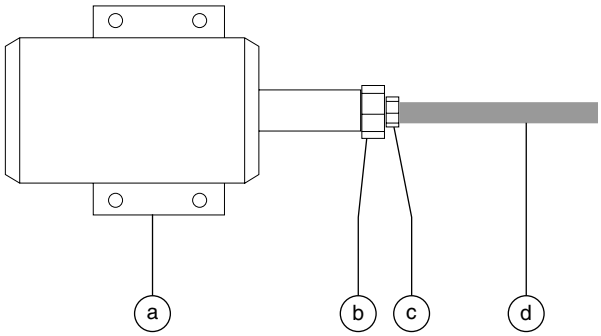
8 Release the latches on the engine tray and fully slide the engine tray out.

9 Insert a 6 inch / 15 cm screwdriver or rod into the engine tray lock hole located near the engine tray roller wheels to prevent the engine tray from moving.

10 **Models with throttle cable:** Loosen the lock nut on the high idle solenoid. Turn the adjustment nut clockwise to increase the rpm or counter clockwise to decrease the rpm. Tighten the lock nut and confirm the rpm.

Models with throttle linkage: Loosen the yoke lock nut, then turn the high idle adjustment nut and solenoid boot counterclockwise to increase the rpm or clockwise to decrease the rpm. Tighten the yoke lock nut and confirm the rpm.

NOTICE Be sure the solenoid fully retracts when activating high idle.



Deutz models with throttle cable

a high idle solenoid
b adjustment nut
c lock nut
d cable sheath

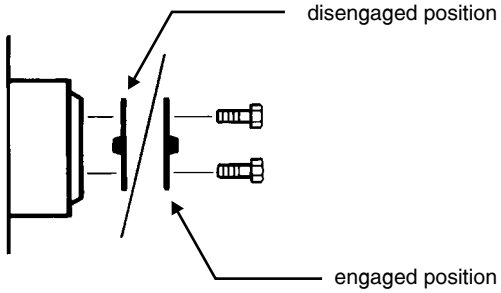
11 Close and latch the engine slide out tray.

REV D CHECKLIST B PROCEDURES

B-7
Confirm the Proper Brake Configuration

Proper brake configuration is essential to safe operation and good machine performance. Hydraulically-released, spring-applied individual wheel brakes can appear to operate normally when they are actually not fully operational.

1 Check each drive hub disconnect cap to be sure it is in the engaged position.



B-8
Inspect the Tires and Wheels (including lug nut torque)

Maintaining the tires and wheels in good condition is essential to safe operation and good performance. Tire and/or wheel failure could result in a machine tip-over. Component damage may also result if problems are not discovered and repaired in a timely fashion.

⚠WARNING Bodily injury hazard. An over-inflated tire can explode and could result in death or serious injury.

⚠WARNING Tip over hazard. Do not use temporary flat tire repair products.

NOTICE The tires on some machines are foam filled and do not need air added to them.

1 Check all tire treads and sidewalls for cuts, cracks, punctures and unusual wear.

2 Check each wheel for damage, bends and cracks.

3 Check each lug nut for proper torque. Refer to Section 2, *Specifications*.

Models with air-filled tires:

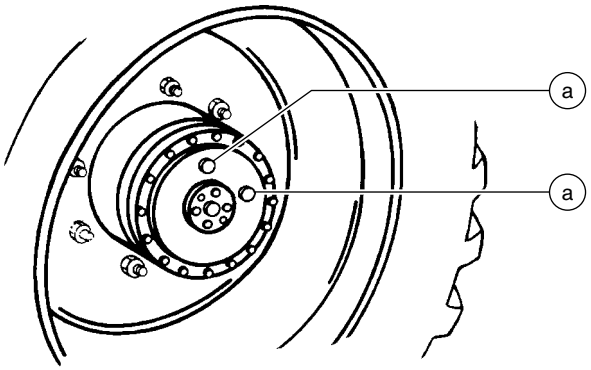
4 Check pressure in each air-filled tire. Add air as necessary. Refer to Section 2, *Specifications*.

CHECKLIST B PROCEDURES REV D

B-9
Check the Oil Level in the Drive Hubs

Failure to maintain proper drive hub oil levels may cause the machine to perform poorly and continued use may cause component damage.

1 Drive the machine to rotate the hub until the plugs are located one on top and the other at 90 degrees.



a drive hub plugs

2 Remove the plug located at 90 degrees and check the oil level.

⊙ Result: The oil level should be even with the bottom of the side plug hole.

3 If necessary, remove the top plug and add oil until the oil level is even with the bottom of the side plug hole. Refer to Section 2, *Specifications*.

4 Apply pipe thread sealant to the plug(s), and then install the plug(s) in the drive hub.

5 Repeat this procedure for each drive hub.

B-10
Test the Key Switch

Proper key switch action and response is essential to safe machine operation. The machine can be operated from the ground or platform controls and the activation of one or the other is accomplished with the key switch. Failure of the key switch to activate the appropriate control panel could cause a hazardous operating situation.

1 Pull out the red Emergency Stop button to the on position at both the ground and platform controls.

2 Turn the key switch to ground controls and start the engine.

3 Check any machine function from the **platform controls**.

⊙ Result: The machine functions should **not** operate.

4 Turn the key switch to the off position.

5 Turn the key switch to platform controls and start the engine.

6 Check any machine function from the **ground controls**.

⊙ Result: The machine functions should **not** operate.

7 Turn the key switch to the off position.

⊙ Result: The engine should stop and no functions should operate.

B-11
Test the Emergency Stop

A properly functioning Emergency Stop is essential for safe machine operation. An improperly operating red Emergency Stop button will fail to shut off power and stop all machine functions, resulting in a hazardous situation.

NOTICE As a safety feature, selecting and operating the ground controls will override the platform controls, except the platform red Emergency Stop button.

1 Start the engine from ground controls.

2 Push in the red Emergency Stop button to the off position.

⊙ Result: The engine should shut off and no machine functions should operate.

3 Start the engine from platform controls.

4 Push in the red Emergency Stop button to the off position.

⊙ Result: The engine should shut off and no machine functions should operate.

NOTICE The red Emergency Stop button at the ground or platform controls will stop all machine operation without regard to the position of the key switch.

B-12
Test the Automotive-style Horn

A functional horn is essential to safe machine operation. The horn is activated at the platform controls and sounds at the ground as a warning to ground personnel. An improperly functioning horn will prevent the operator from alerting ground personnel of hazards or unsafe conditions.

1 Turn the key switch to platform controls and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

2 Push down the horn button at the platform controls.

⊙ Result: The horn should sound.

NOTICE If necessary, the horn can be adjusted to obtain the loudest volume by turning the adjustment screw near the wire terminals on the horn.

CHECKLIST B PROCEDURES REV D

B-13
Test the Fuel Select Operation - Ford Models

The ability to select and switch between gasoline and LPG fuels as needed is essential to safe machine operation. A fuel selection can be made while the engine is running or not.
Fuel switching malfunctions and/or the failure of the engine to start and run properly in both fuel modes and through all idle speeds can indicate fuel system problems that could develop into a hazardous situation.

NOTICE Perform this test after checking the gasoline and LPG fuel levels.

1 Start the engine from the platform controls and allow the engine to run at low idle.

2 Press high idle button at the platform controls to allow the engine to run at high idle.

⊙ Result: The high idle indicator light should be on and the engine should start promptly and operate smoothly in low and high idle.

3 Press high idle button again to return the engine to low idle.

⊙ Result: The high idle indicator light should turn off and the engine should return to low idle.

4 Press the engine stop button.

⊙ Result: The engine should stop.

5 Press the LPG operation button.

⊙ Result: The LPG indicator light should be on.

6 Start the engine and allow it to run at low idle.

7 Press high idle button to allow the engine to run at high idle.

⊙ Result: The high idle indicator light should be on and the engine should start promptly and operate smoothly in low and high idle.

NOTICE The engine may hesitate momentarily and then continue to run on the selected fuel if the fuel source is switched while the engine is running.

B-14
Test the Drive Brakes

Proper brake action is essential to safe machine operation. The drive brake function should operate smoothly, free of hesitation, jerking and unusual noise. Hydraulically-released individual wheel brakes can appear to operate normally when they are actually not fully operational.

⚠WARNING Collision hazard. Be sure that the machine is not in free-wheel or partial free-wheel configuration. Refer to B-7, *Confirm the Proper Brake Configuration*.

NOTICE Select a test area that is firm, level and free of obstructions.

NOTICE Be sure the platform is fully retracted and lowered to the stowed position.

1 Mark a test line on the ground for reference.

2 Start the engine from the platform controls.

3 Choose a point on the machine; i.e., contact patch of a tire, as a visual reference for use when crossing the test line.

4 Bring the machine to top drive speed before reaching the test line. Release the function enable switch on the control handle or release the control handle when your reference point on the machine crosses the test line.

5 Measure the distance between the test line and your machine reference point. Refer to Section 2, *Specifications.*

NOTICE The brakes must be able to hold the machine on any slope it is able to climb.

B-15
Test the Drive Speed - Stowed Position

Proper drive function movement is essential to safe machine operation. The drive function should respond quickly and smoothly to operator control. Drive performance should also be free of hesitation, jerking and unusual noise over the entire proportionally controlled speed range.

NOTICE Select a test area that is firm, level and free of obstructions.

NOTICE Be sure the platform is fully retracted and lowered to the stowed position.

1 Create start and finish lines by marking two lines on the ground 40 feet / 12.2 m apart.

2 Turn the key switch to platform controls and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

3 Start the engine from the platform controls.

4 Lower the platform to the stowed position.

5 Choose a point on the machine; i.e., contact patch of a tire, as a visual reference for use when crossing the start and finish lines.

CHECKLIST B PROCEDURES REV D

Models before serial number GS9003-41523, and after serial number GS9003-41522 with software revision B1 or lower:

6 Bring the machine to maximum drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.

7 Continue at full speed and note the time when the machine reference point passes over the finish line. Refer to Section 2, *Specifications.*

Models after serial number GS9003-41522 with software revision C0 or higher:

6 Bring the machine to maximum forward drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.

7 Continue at full speed and note the time when the machine reference point passes over the finish line. Refer to Section 2, *Specifications.*

8 Bring the machine to maximum reverse drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.

9 Continue at full speed and note the time when the machine reference point passes over the finish line. Refer to Section 2, *Specifications.*

B-16
Test the Drive Speed - Raised Position

Proper drive function movement is essential to safe machine operation. The drive function should respond quickly and smoothly to operator control. Drive performance should also be free of hesitation, jerking and unusual noise over the entire proportionally controlled speed range.

NOTICE Select a test area that is firm, level and free of obstructions.

1 Create start and finish lines by marking two lines on the ground 40 feet / 12.2 m apart.

2 Turn the key switch to platform controls and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

3 Start the engine from the platform controls.

4 Press and hold a function enable/speed select button. Raise the platform approximately 12 feet / 3.6 m from the ground.

5 Choose a point on the machine; i.e., contact patch of a tire, as a visual reference for use when crossing the start and finish lines.

6 Press and hold the function enable switch and slowly move the control handle to the full drive position.

7 Bring the machine to maximum drive speed before reaching the start line. Begin timing when your reference point on the machine crosses the start line.

8 Continue at full speed and note the time when the machine reference point passes over the finish line. Refer to Section 2, *Specifications.*

REV D CHECKLIST B PROCEDURES

B-17
Perform Hydraulic Oil Analysis

Replacement or testing of the hydraulic oil is essential for good machine performance and service life. Dirty oil and a clogged suction strainer may cause the machine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require oil changes to be performed more often.

NOTICE Before replacing the hydraulic oil, the oil may be tested by an oil distributor for specific levels of contamination to verify that changing the oil is necessary. **If the hydraulic oil is not replaced at the two year inspection, test the oil quarterly. Replace the oil when it fails the test.** See E-1, *Test or Replace the Hydraulic Oil.*

B-18
Replace the Medium and High Pressure Hydraulic Filter Elements

Replacing the medium pressure hydraulic filter element is essential to good machine performance and service life. A dirty or clogged filter element may cause the machine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require that the filter element be replaced more often.

⚠CAUTION Bodily injury hazard. Beware of hot oil. Contact with hot oil may cause severe burns.

NOTICE Perform this procedure with the engine off.

1 Release the latches on the engine tray and fully slide the engine tray out.

2 Insert a 6 inch / 15 cm screwdriver or rod into the engine tray lock hole located near the engine tray roller wheels to prevent the engine tray from moving.

3 Locate the medium pressure hydraulic filter mounted on the side of the engine near the pump.

4 Remove the filter housing using a wrench on the nut provided on the bottom of the housing.

5 Remove the filter element from the housing.

6 Inspect the housing seal and replace it if necessary.

7 Install the new filter and hand tighten the housing onto the filter head.

8 Locate the high pressure hydraulic filter mounted next to the function manifold.

9 Remove the filter housing using a filter wrench.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

10 Remove the filter element from the housing.

11 Inspect the housing seal and replace it if necessary.

12 Install the new filter element and hand tighten the housing onto the filter head.

13 Use a permanent ink marker to write the date and number of hours from the hour meter on the filters.

14 Start the engine from the ground controls.

15 Inspect the filter assembly to be sure that there are no leaks.

16 Clean up any oil that may have spilled during the installation procedure.

B-19
Inspect the Fuel Tank Cap Venting System

NOTICE Genie requires that this procedure be performed every 250 hours or quarterly, whichever comes first. Perform this procedure more often if dusty conditions exist.

A free-breathing fuel tank cap is essential for good engine performance and service life. A dirty or clogged fuel tank cap may cause the engine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require that the cap be inspected more often.

⚠DANGER Explosion and fire hazard. Engine fuels are combustible. Perform this procedure in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

NOTICE Perform this procedure with the engine off.

1 Remove the cap from the fuel tank.

2 Check for proper venting.

NOTICE When checking for positive fuel tank cap venting, air should pass freely through the cap.

⊙ Result: Air should pass through the fuel tank cap. Clean or replace the cap.

3 Using a mild solvent, carefully wash the cap venting system. Dry using low pressure compressed air.

4 Repeat step 2.

5 Install the fuel tank cap onto the fuel tank.

REV D CHECKLIST B PROCEDURES

B-20
Perform Engine Maintenance - Ford Models

NOTICE Engine specifications require that this procedure be performed every 400 hours or semi-annually, whichever comes first.

Required maintenance procedures and additional engine information is available in the *Ford LRG425 Operator Handbook* (Ford part number FPP 194-302).

Ford LRG 425 Operator Handbook	
Genie part number	84792

Checklist C Procedures

REV C

C-1 Test the Platform Overload System (if equipped)

NOTICE Genie specifications require that this procedure be performed every 500 hours or six months, whichever comes first OR when the machine fails to lift the maximum rated load.

Testing the platform overload system regularly is essential to safe machine operation. Continued use of an improperly operating platform overload system could result in the system not sensing an overloaded platform condition. Machine stability could be compromised resulting in the machine tipping over.

NOTICE Perform this procedure with the machine on a firm, level surface that is free of obstructions.

1 Disconnect the platform controls from the machine at the platform.

2 Open the ground control panel and locate the Electronic Control Module (ECM).

3 Tag and disconnect the platform controls wire harness from the ECM wire harness.

4 Securely connect the platform controls to the ECM wire harness.

5 Locate the terminal strip behind the ground control panel.

6 Tag and disconnect the black wire of the maximum height limit switch wire harness from the A10 terminal of the terminal strip.

7 Tag and disconnect the white wire of the maximum height limit switch wire harness from the B9 terminal of the terminal strip.

8 Securely connect a jumper wire from terminal A10 of the terminal strip to terminal B9 of the terminal strip.

9 Turn the key switch to platform control and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

10 Fully raise the platform. Release the joystick.

⊙ Result: The engine should stop and an alarm should sound and fault code 99 PLATFORM OVERLOAD should be present in the ECM diagnostic display window at the ground controls.

11 Activate the auxiliary lowering function and lower the platform approximately 4.5 m.

12 Turn the key switch to the off position.

13 Disconnect the jumper wire from terminal A10 of the terminal strip to terminal B9 of the terminal strip.

14 Securely connect the black wire of the maximum height limit switch wire harness to terminal A10 of the terminal strip.

15 Securely connect the white wire of the maximum height limit switch wire harness to terminal B9 of the terminal strip.

16 Turn the key switch to platform control.

17 Fully raise the platform. Release the joystick.

⊙ Result: The platform should stop raising at maximum height. The engine should continue to run and an alarm should not sound.

18 Lower the platform to the stowed position.

19 Disconnect the platform controls from the ECM wire harness.

20 Securely connect the platform controls wire harness to the ECM wire harness.

21 Securely connect the platform controls to the platform controls wire harness at the platform.

REV C CHECKLIST C PROCEDURES

C-2
Perform Engine Maintenance - Deutz Models

NOTICE Engine specifications require that this procedure be performed every 500 hours or semi-annually, whichever comes first.

Required maintenance procedures and additional engine information is available in the *Deutz 1011F Operation Manual* (Deutz part number 0297 9683) or the *Deutz 2011 Operation Manual* (Deutz part number 0297 9929).

Deutz 1011F Operation Manual	
Genie part number	52883
Deutz 2011 Operation Manual	
Genie part number	84794

C-3
Perform Engine Maintenance - Ford Models

NOTICE Engine specifications require that this procedure be performed every 800 hours or semi-annually, whichever comes first.

Required maintenance procedures and additional engine information is available in the *Ford LRG425 Operator Handbook* (Ford part number FPP 194-302).

Ford LRG 425 Operator Handbook	
Genie part number	84792

Checklist D Procedures

REV D

D-1
Check the Scissor Arm Wear Pads

Maintaining the scissor arm wear pads in good condition is essential to safe machine operation. Continued use of worn out wear pads may result in component damage and unsafe operating conditions.

NOTICE Perform this procedure on a firm, level surface with the platform in the stowed position.

1 Measure the thickness of each chassis wear pad at the steer end of the machine.

⊙ Result: The measurement is 5/16 inch / 8 mm or more. Proceed to step 2.

⊠ Result: The measurement is less than 5/16 inch / 8 mm. Replace both wear pads.

2 Measure the thickness of each chassis wear pad at the non-steer end of the machine.

⊙ Result: The measurement is 5/16 inch / 8 mm or more. Proceed to step 3.

⊠ Result: The measurement is less than 5/16 inch / 8 mm. Replace both wear pads.

3 Measure the thickness of each platform scissor arm wear pad at the steer end of the machine.

⊙ Result: The measurement is 5/16 inch / 8 mm or more. Proceed to step 4.

⊠ Result: The measurement is less than 5/16 inch / 8 mm. Replace both wear pads.

4 Measure the thickness of each platform scissor arm wear pad at the non-steer end of the machine.

⊙ Result: The measurement is 5/16 inch / 8 mm or more.

⊠ Result: The measurement is less than 5/16 inch / 8 mm. Replace both wear pads.

D-2
Check the Free-wheel Configuration

Proper use of the free-wheel configuration is essential to safe machine operation. The free-wheel configuration is used primarily for towing. A machine configured to free-wheel without operator knowledge may cause death or serious injury and property damage.

⚠WARNING Collision hazard. Select a work site that is firm and level.

CAUTION Component damage hazard. If the machine must be towed, do not exceed 2 mph / 3.2 km/h.

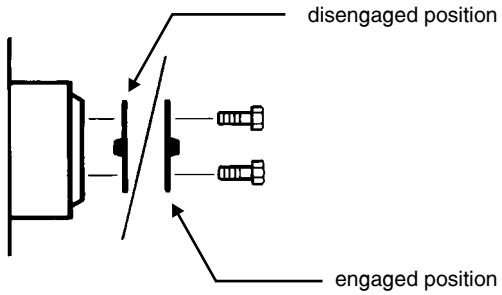
1 Chock the wheels at the steer end of the machine.

2 Center a lifting jack of ample capacity (20,000 lbs / 10,000 kg) under the drive chassis between the wheels at the non-steer end of the machine.

3 Lift the wheels off the ground and place blocks under the drive chassis for support.

⚠WARNING Crushing hazard. The chassis could fall if not properly supported.

4 Disengage the drive hubs by turning over the drive hub disconnect caps on each wheel hub at the non-steer end.



5 Manually rotate each wheel at the non-steer end.

⊙ Result: Each wheel should rotate with minimum effort.

6 Engage the drive hubs by turning over the hub disconnect caps. Rotate each wheel to check for engagement. Raise the machine and remove the blocks. Lower the machine.

⚠WARNING Collision hazard. Failure to engage the drive hubs could result in death or serious injury and property damage.

7 Chock the wheels at the non-steer end of the machine.

8 Center a lifting jack of ample capacity (20,000 lbs / 10,000 kg) under the drive chassis between the wheels at the steer end.

9 Lift the wheels off the ground and place blocks under the drive chassis for support.

⚠WARNING Crushing hazard. The chassis could fall if not properly supported.

10 Disengage the drive hubs by turning over the drive hub disconnect caps on each wheel hub at the steer end.

11 Manually rotate each wheel at the steer end.

⊙ Result: Each wheel should rotate with minimum effort.

12 Engage the drive hubs by turning over the hub disconnect caps. Rotate each wheel to check for engagement. Raise the machine and remove the blocks. Lower the machine.

⚠WARNING Collision hazard. Failure to engage the drive hubs could result in death or serious injury and property damage.

CHECKLIST D PROCEDURES REV D

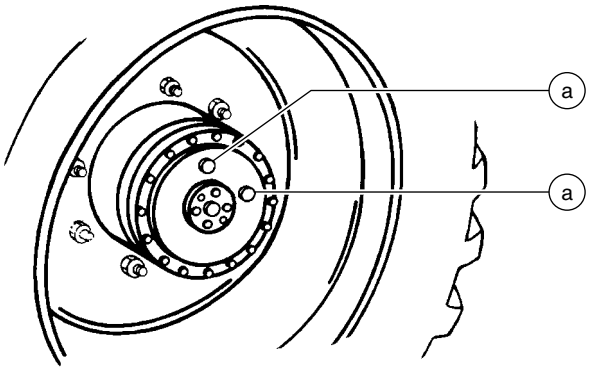
D-3
Replace the Drive Hub Oil

Replacing the drive hub oil is essential for good machine performance and service life. Failure to replace the drive hub oil at yearly intervals may cause the machine to perform poorly and continued use may cause component damage.

1 Select the drive hub to be serviced. Drive the machine until one of the two plugs is at the lowest point.

2 Remove both plugs and drain the oil into a suitable container.

3 Drive the machine until one plug is at the top and the other is at 90 degrees.



a drive hub plugs

4 Fill the hub with oil from the top hole until the oil level is even with the bottom of the side hole. Apply pipe thread sealant to the plugs. Install the plugs. Refer to Section 2, *Specifications.*

5 Repeat steps 1 through 4 for all the other drive hubs.

D-4
Replace the Diesel Fuel Filter/Water Separator - Deutz Models

Replacing the diesel fuel filter/water separator is essential to good engine performance and service life. A dirty or clogged filter/water separator may cause the engine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require that the filter/water separator be replaced more often.

⚠DANGER Explosion and fire hazard. Engine fuels are combustible. Replace the fuel filter/water separator in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

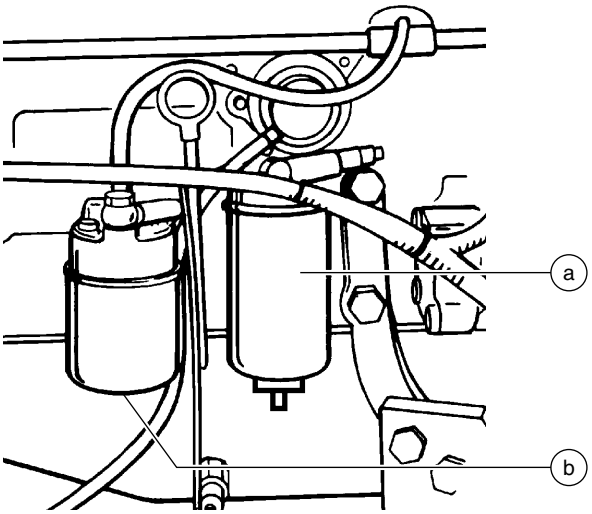
NOTICE Perform this procedure with the engine off.

1 Release the latches on the engine tray and fully slide the engine tray out.

2 Insert a 6 inch / 15 cm screwdriver or rod into the engine tray lock hole located near the engine tray roller wheels to prevent the engine tray from moving.

3 Turn the manual fuel shutoff valves, located at the fuel tank, to the closed position.

4 Remove the fuel filter/water separator with a filter wrench.



a oil filter
b fuel filter/water separator

5 Fill the new filter with fresh diesel fuel and apply a thin layer of diesel fuel to the new fuel filter gasket.

6 Install the new filter and tighten it securely by hand. Clean up any diesel fuel that might have spilled during the procedure.

7 Use a permanent ink marker to write the date and number of hours from the hour meter on the filter.

8 Turn the manual fuel shutoff valves, located at the fuel tank, to the open position.

9 Start the engine from the ground controls and inspect the fuel filter for leaks.

⚠DANGER Explosion and fire hazard. If a fuel leak is discovered, keep any additional personnel from entering the area and do not operate the machine. Repair the leak immediately.

D-5 Calibrate the Platform Overload System (if equipped)

NOTICE Genie specifications require that this procedure be performed every 1000 hours or annually, whichever comes first.

On machines with platform overload systems, proper calibration is essential to safe machine operation. An improperly calibrated platform overload system could result in the system failing to sense an overloaded platform. The stability of the machine is compromised and it could tip over.

NOTICE Be sure the hydraulic oil level is between the full and add marks on the oil level indicator.

NOTICE Perform this procedure with the machine on a firm, level surface that is free of obstructions.

1 **Models with outriggers:** Deploy the outriggers and level the machine.

2 Apply a thin layer of dry film lubricant to the area of the chassis where the scissor arm wear pads make contact.

3 Disconnect the platform controls from the machine at the platform.

4 Open the large ground control panel door and locate the Electronic Control Module (ECM) wire harness to platform controls wire harness connection below the ground controls.

CHECKLIST D PROCEDURES REV D

5 Tag and disconnect the platform controls wire harness from the ECM wire harness.

6 Securely connect the platform controls to the ECM wire harness.

7 Using a suitable lifting device, place a test weight, corresponding to the maximum load as indicated on the capacity indicator decal, in the center of the platform floor. Secure the weight to the platform. Refer to the chart below.

GS-3390	1878 kg
GS-4390 (most models - refer to capacity indicator decal)	1286 kg
GS-4390 (some models - refer to capacity indicator decal)	1421 kg
GS-5390	1410 kg

8 Turn the key switch to platform control and pull out the red Emergency Stop button to the on position at both the ground and platform controls. Start the engine.

9 Raise the platform to approximately 6 m.

10 Release the safety arm latch, lift the safety arm and rotate to a vertical position. Lock the safety arm in position.

11 Remove the cover from the pressure switch.

NOTICE The pressure switch is located on the lift cylinder.

12 Slowly turn the nut of the platform overload pressure switch one-quarter turn into the hydraulic line.

13 Push in the red Emergency Stop button to the off position at the ground controls.

14 Pull out the red Emergency Stop button to the on position at the ground controls. Wait 3 seconds and start the engine.

⊙ Result: The alarm doesn't sound and the engine will start and run. Proceed to step 15.

⊠ Result: The engine will not start and an alarm is sounding. Repeat this procedure beginning with step 12.

NOTICE The red Emergency Stop button must be cycled after each quarter turn of the nut to allow the platform overload system to reset.

NOTICE Wait a minimum of 3 seconds between each quarter turn of the nut to allow the platform overload system to reset.

REV D CHECKLIST D PROCEDURES

15 Raise the platform until the position indicator corresponds to the maximum load position of the capacity indicator decal.

⚠DANGER Tip-over hazard. Raising the platform with maximum load above the maximum load position, as shown on the capacity indicator decal on the side of the platform, could result in the machine tipping over, resulting in death or serious injury. Do not raise the platform above the maximum load position of the capacity indicator decal.

NOTICE To perform this step, the system relief valve will need to be adjusted.

NOTICE Before raising the platform, applying a piece of tape onto the underside of the platform, at a point which corresponds to the maximum load position of the capacity indicator decal, may help complete this part of the procedure.

⊙ Result: The engine continues to run. Proceed to step 16.

⊠ Result: The engine has stopped and an alarm is sounding. Proceed to step 17.

Set the pressure switch:

16 Using a wrench, turn the nut of the platform overload pressure switch out of the hydraulic line until the overload alarm sounds and the engine stops running.

NOTICE Turning the nut out of the hydraulic line will activate the alarm; turning the nut into the hydraulic line will deactivate the alarm.

17 Slowly turn the nut of the platform overload pressure switch one-quarter turn into the hydraulic line.

18 Push in the red Emergency Stop button to the off position at the ground controls.

19 Pull out the red Emergency Stop button to the on position at the ground controls. Wait 3 seconds and start the engine.

⊙ Result: The alarm doesn't sound and the engine will start and run. Proceed to step 20.

⊠ Result: The engine will not start and an alarm is sounding. Repeat this procedure beginning with step 17.

NOTICE The red Emergency Stop button must be cycled after each quarter turn of the nut to allow the platform overload system to reset.

NOTICE Wait a minimum of 3 seconds between each quarter turn of the nut to allow the platform overload system to reset.

20 Return the safety arm to the stowed position. Lower the platform to the stowed position.

NOTICE After returning the safety arm to the stowed position, use the auxiliary down function to lower the platform.

CHECKLIST D PROCEDURES REV D

Set the maximum height limit switch:

21 Using a suitable lifting device, place a test weight in the center of the platform floor. Secure the weight to the platform. Refer to the chart below.

GS-3390	1135 kg
GS-4390 (most models - refer to capacity indicator decal)	680 kg
GS-4390 (some models - refer to capacity indicator decal)	816 kg
GS-5390	680 kg

22 Raise the platform to approximately 6 m.

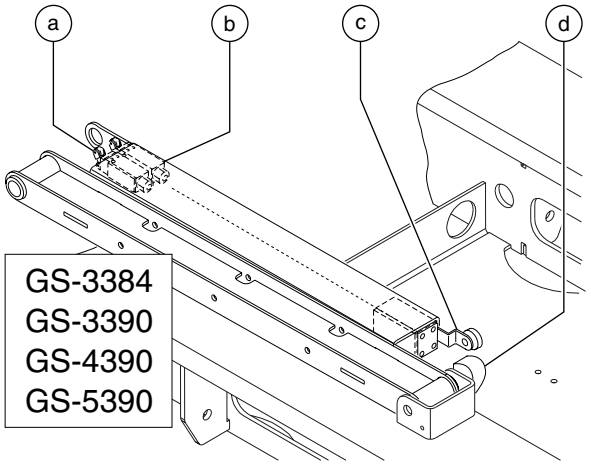
23 Release the safety arm latch, lift the safety arm and rotate to a vertical position. Lock the safety arm in position.

24 Remove the maximum height limit switch cam fasteners. Remove the cam from the machine so that the limit switch will not be activated.

25 Raise the platform until it is approximately 65 cm less than full height.

26 Raise the platform in 5 cm increments until the overload alarm sounds and the engine stops running. Proceed to step 27.

⊠ Result: The alarm does not sound and the engine continues to run when the platform reaches full height. Repeat this procedure beginning with step 7.



Limit switch legend

a load sense delay limit switch
b down limit switch
c maximum height limit switch
d maximum height limit switch cam

27 Install and adjust the maximum height limit switch cam until the limit switch activates just before the point reached in step 26. Securely tighten the cam fasteners. Do not over tighten.

28 Use the auxiliary down function to lower the platform approximately 15 cm.

29 Start the engine and fully raise the platform.

⊙ Result: The engine continues to run. Proceed to step 30.

⊠ Result: An alarm sounds and the engine stops running. Repeat this procedure beginning with step 24.

30 Lower the platform to approximately 6 m.

31 Return the safety arm to the stowed position.

REV D CHECKLIST D PROCEDURES

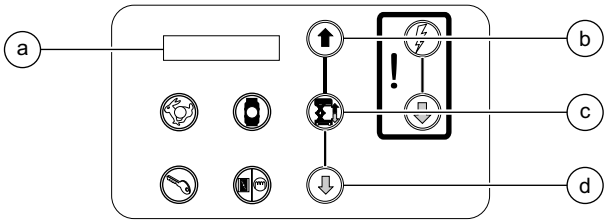
Disable the descent delay function:

32 Push in the red Emergency Stop button to the off position at the ground controls.

33 Turn the key switch to ground control.

34 Press and hold both the blue platform up and yellow platform down buttons. Pull out the red Emergency Stop button to the on position at the ground controls.

⊙ Result: TUNE SPEEDS is showing in the diagnostic display window.



a diagnostic display
b blue platform up button
c lift function enable button
d yellow platform down button

35 Use the yellow platform down arrow to scroll to SELECT OPTIONS.

⊙ Result: SELECT OPTIONS is showing in the diagnostic display window. The ECM is now in programming mode.

36 Press the lift function enable button.

⊙ Result: DESCENT DELAY ON is showing in the diagnostic display window.

37 Press the lift function enable button to deactivate the descent delay option.

⊙ Result: DESCENT DELAY OFF is showing in the diagnostic display window.

38 Push in the red Emergency Stop button to the off position at the ground controls.

39 Pull out the red Emergency Stop button to the on position at the ground controls.

NOTICE For more information on programming, refer to Section 4, *Repair*.

Calibrate the load sense delay limit switch:

40 Turn the key switch to platform control. Start the engine.

41 Lower the platform until the load sense delay limit switch activates and the platform stops lowering. Release the joystick.

⊙ Result: The alarm does not sound and the engine continues to run. Proceed to step 49.

⊠ Result: The alarm sounds and the engines stops running. The load sense delay limit switch needs to be calibrated. Proceed to step 42.

42 Raise the platform to approximately 6 m.

43 Release the safety arm latch, lift the safety arm and rotate to a vertical position. Lock the safety arm in position.

44 Loosen the fasteners securing the load sense delay limit switch cam just enough to allow movement of the cam.

45 Working from the outside of the machine, rotate the load sense delay limit switch cam in a clockwise direction until the cam lobe is approximately 1 mm lower. Tighten the fasteners. Do not over tighten.

46 Return the safety arm to the stowed position.

47 Raise the platform approximately 1 m.

48 Repeat this procedure beginning with step 41.

CHECKLIST D PROCEDURES REV D

Enable the descent delay function:

49 Push in the red Emergency Stop button to the off position at the ground controls.

50 Turn the key switch to ground control.

51 Press and hold both the blue platform up and yellow platform down buttons. Pull out the red Emergency Stop button to the on position at the ground controls.

⊙ Result: TUNE SPEEDS is showing in the diagnostic display window.

52 Use the yellow platform down arrow to scroll to select options.

⊙ Result: SELECT OPTIONS is showing in the diagnostic display window. The ECM is now in programming mode.

53 Press the lift function enable button.

⊙ Result: DESCENT DELAY OFF is showing in the diagnostic display window.

54 Press the lift function enable button to activate the descent delay option.

⊙ Result: DESCENT DELAY ON is showing in the diagnostic display window.

55 Push in the red Emergency Stop button to the off position at the ground controls.

56 Pull out the red Emergency Stop button to the on position at the ground controls.

Calibrate the down limit switch:

57 Turn the key switch to platform control. Start the engine.

58 Raise the platform approximately 1 m.

59 Lower the platform until the down limit switch activates and the platform stops lowering. Quickly release the controls and then **immediately** attempt to lower the platform to the stowed position.

⊙ Result: The platform stops for 4 to six seconds. Release the joystick and proceed to step 67.

⊠ Result: The platform stops and then will immediately begin to lower again. The down limit switch needs to be calibrated. Proceed to step 60.

60 Raise the platform to approximately 6 m.

61 Release the safety arm latch, lift the safety arm and rotate to a vertical position. Lock the safety arm in position.

62 Loosen the fasteners securing the down limit switch cam just enough to allow movement of the cam.

63 Working from the outside of the machine, rotate the down limit switch cam in a clockwise direction until the cam lobe is approximately 1 mm lower. Tighten the fasteners. Do not over tighten.

NOTICE When adjusting the down limit switch cam, do not move cam which activates the load sense delay limit switch.

REV D CHECKLIST D PROCEDURES

64 Raise the platform approximately 1 m.

65 Return the safety arm to the stowed position.

66 Repeat this procedure beginning with step 59.

67 Lower the platform to the stowed position and remove the weight from the platform.

⊙ Result: The platform lowers to the stowed position. Proceed to step 72.

⊠ Result: The platform stops lowering. The down limit switch needs to be calibrated. Proceed to step 68.

68 Raise the platform to approximately 6 m.

69 Release the safety arm latch, lift the safety arm and rotate to a vertical position. Lock the safety arm in position.

70 Loosen the fasteners securing the down limit switch cam just enough to allow movement of the cam.

71 Working from the outside of the machine, rotate the down limit switch cam in a counter clockwise direction until the cam lobe is approximately 1 mm higher. Tighten the fasteners. Do not over tighten.

NOTICE When adjusting the down limit switch cam, do not move cam which activates the load sense delay limit switch.

72 Raise the platform to approximately 6 m.

73 Release the safety arm latch, lift the safety arm and rotate to a vertical position. Lock the safety arm in position.

74 Install the cover onto the platform overload pressure switch box and securely tighten the cover retaining fasteners. Do not over tighten.

75 Apply Sentry Seal to one of the cover retaining fasteners where it contacts the platform overload pressure switch box.

76 Return the safety arm to the stowed position.

77 Lower the platform to the stowed position.

78 Calibrate the system relief valve.

TROUBLESHOOTING THE PLATFORM OVERLOAD SYSTEM

CONDITION	POSSIBLE CAUSE	SOLUTION
CANNOT LIFT RATED LOAD	RELIEF VALVE SET TOO LOW	INCREASE RELIEF VALVE PRESSURE
AT MAXIMUM HEIGHT WITH RATED LOAD IN PLATFORM, THE PRESSURE SWITCH ALARM CONTINUES TO SOUND	SYSTEM NEEDS TO BE RESET	TURN OFF RED EMERGENCY STOP BUTTON, WAIT THREE SECONDS AND TURN BACK ON
	MAXIMUM HEIGHT LIMIT SWITCH OUT OF ADJUSTMENT -OR- FAULTY	LOWER THE UP LIMIT SWITCH SLIGHTLY -OR- REPLACE CONTACTS
	TOO MUCH WEIGHT IN PLATFORM	PUT CORRECT RATED LOAD IN PLATFORM
	PRESSURE SWITCH OUT OF ADJUSTMENT	TURN THE PRESSURE SWITCH NUT 1/4 TURN INTO THE HYDRAULIC LINE
	BATTERIES ARE NOT FULLY CHARGED	CHARGE BATTERIES
	OVERLOAD SYSTEM NOT ADJUSTED PROPERLY	REPEAT CALIBRATION PROCEDURE
	SLIDER CHANNEL NOT LUBRICATED	LUBRICATE SLIDER CHANNELS
AT DOWN LIMIT WITH RATED LOAD IN PLATFORM, THE PRESSURE SWITCH ALARM CONTINUES TO SOUND	SYSTEM NEEDS TO BE RESET	TURN OFF RED EMERGENCY STOP BUTTON, WAIT THREE SECONDS AND TURN BACK ON
	DOWN LIMIT SWITCH OUT OF ADJUSTMENT	RAISE THE DOWN LIMIT SWITCH
	TOO MUCH WEIGHT IN PLATFORM	PUT CORRECT RATED LOAD IN PLATFORM
	OVERLOAD SYSTEM NOT ADJUSTED PROPERLY	TURN THE PRESSURE SWITCH NUT 1/4 TURN INTO THE HYDRAULIC LINE -OR- REPEAT CALIBRATION PROCEDURE

CHECKLIST D PROCEDURES REV D

D-6
Replace the Hydraulic Tank Return Filter

Replacement of the hydraulic tank return filter is essential for good machine performance and service life. A dirty or clogged filter may cause the machine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require that the filter be replaced more often.

⚠CAUTION Bodily injury hazard. Beware of hot oil. Contact with hot oil may cause severe burns.

NOTICE The hydraulic filter is mounted on the function manifold next to the hydraulic power unit.

1 Open the function manifold tray door.

2 Locate the hydraulic tank return filter located behind the ladder.

3 Remove the filter with an oil filter wrench. Clean the area where the hydraulic oil filter meets the filter head.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

4 Apply a thin layer of oil to the new oil filter gasket.

5 Install the new filter and tighten it securely by hand.

6 Use a permanent ink marker to write the date and number of hours from the hour meter on the filter.

7 Clean up any oil that may have spilled during the replacement procedure.

8 Turn the key switch to ground controls and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

9 Start the engine from the ground controls.

10 Hold the function enable toggle switch in the up direction and activate the platform up function.

11 Inspect the filter and related components to be sure that there are no leaks.

REV D CHECKLIST D PROCEDURES

D-7
Perform Engine Maintenance - Deutz Models

NOTICE Engine specifications require that this procedure be performed every 1000 hours or annually, whichever comes first.

Required maintenance procedures and additional engine information is available in the *Deutz 1011F Operation Manual* (Deutz part number 0297 9683) or the *Deutz 2011 Operation Manual* (Deutz part number 0297 9929).

Deutz 1011F Operation Manual	
Genie part number	52883
Deutz 2011 Operation Manual	
Genie part number	84794

Checklist E Procedures

REV C

E-1
Test or Replace the Hydraulic Oil

Replacement or testing of the hydraulic oil is essential for good machine performance and service life. Dirty oil and suction strainers may cause the machine to perform poorly and continued use may cause component damage. Extremely dirty conditions may require oil changes to be performed more frequently.

CAUTION Component damage hazard. The work area and surfaces where this procedure will be performed must be clean and free of debris that could get into the hydraulic system.

NOTICE Before replacing the hydraulic oil, the oil may be tested by an oil distributor for specific levels of contamination to verify that changing the oil is necessary. **If the hydraulic oil is not replaced at the two year inspection, test the oil quarterly. Replace the oil when it fails the test.**

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation.
Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

NOTICE In extreme cold conditions, 20°F / -6°C and below, warm the engine for 5 minutes before operating to prevent hydraulic system damage.

1 Turn the key switch to ground controls and pull out the red Emergency Stop buttons to the on position at both the ground and platform controls.

2 Start the engine.

3 Raise the platform approximately 18 feet / 5.5 m from the ground.

4 **Before serial number 40351:** Release the safety arm latch, lift the safety arm and rotate down to a vertical position.

After serial number 40350: Release the safety arm latch, lift the safety arm and rotate to a vertical position. Lock the safety arm in position.

NOTICE Be sure that the safety arm is locked in the vertical position.

5 Lower the platform onto the safety arm and turn the engine off.

⚠WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

6 Attach a lifting strap from an overhead crane to the entry ladder on the hydraulic tank side of the machine.

7 Remove the entry ladder mounting fasteners and remove the entry ladder from the machine.

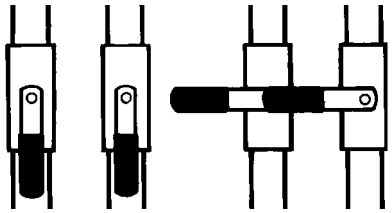
⚠WARNING Crushing hazard. The entry ladder could become unbalanced and fall when removed from the machine if not properly supported.

8 Remove the retaining fasteners from the access plate located behind the hydraulic and fuel tank tray and remove the access plate from the machine.

REV C CHECKLIST E PROCEDURES

9 If equipped, close the two hydraulic shutoff valves located at the hydraulic tank.

CAUTION Component damage hazard. The engine must not be started with the hydraulic tank shutoff valves in the closed position or component damage will occur. If the tank valves are closed, remove the key from the key switch and tag the machine to inform personnel of the condition.



open closed

10 Remove the drain plug from the hydraulic tank and completely drain the tank into a suitable container. See capacity specifications.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

⚠CAUTION Bodily injury hazard. Beware of hot engine parts and oil. Contact with hot oil and/or hot engine parts may cause severe burns.

11 Tag, disconnect and plug the two suction hoses that are attached to the hydraulic tank shutoff valves or tank.

12 Tag, disconnect and plug the tank return hose at the tank.

13 Tag, disconnect and plug the T-fitting located at the tank with the 2 hoses connected to it.

14 Remove the hydraulic tank strap retaining fasteners and remove the hydraulic tank strap from the machine.

15 Support and secure the hydraulic tank to a suitable lifting device.

16 Remove the hydraulic tank from the machine.

⚠WARNING Crushing hazard. The hydraulic tank could become unbalanced and fall if it is not properly supported and secured to the lifting device when it is removed from the machine.

17 If equippd, remove the suction strainers from the tank and clean them using a mild solvent.

18 Rinse out the inside of the tank using a mild solvent.

19 If equipped, install the suction strainers using Loctite® 567 on the pipe threads.

NOTICE Always use Loctite® 567 on all pipe threads.

20 Install the drain plug using Loctite® 567 on the pipe threads.

NOTICE Always use Loctite® 567 on all pipe threads.

21 Install the hydraulic tank onto the machine.

22 Install the hydraulic tank strap.

23 Install the two suction hoses.

CHECKLIST E PROCEDURES REV C

24 Install the tank return hose.

25 Install the T-fitting with the 2 hoses connected to it.

26 Fill the tank with hydraulic oil until the level is within the top 2 inches / 5.1 cm from the top of the sight gauge. Do not overfill. Refer to Section 2, *Specifications.*

27 Clean up any oil that may have spilled during the procedure.

28 If equipped, open the hydraulic tank shutoff valves.

CAUTION Component damage hazard. Be sure to open the two hydraulic tank shutoff valves and prime the pump after installing the hydraulic tank. Refer to Repair procedure 6-2, *How to Prime the Pump*.

29 Install the access plate and install the access plate retaining fasteners.

30 Install the entry ladder and install the entry ladder mounting fasteners.

31 Clean up any fuel that may have spilled during this procedure.

E-2
Perform Engine Maintenance - Deutz 1011F Models

NOTICE Engine specifications require that this procedure be performed every 2000 hours or two years, whichever comes first.

Required maintenance procedures and additional engine information is available in the *Deutz 1011F Operation Manual* (Deutz part number 0297 9683).

Deutz 1011F Operation Manual	
Genie part number	52883

REV C CHECKLIST E PROCEDURES

E-3
Perform Engine Maintenance - Ford Models

NOTICE Engine specifications require that this procedure be performed every 2400 hours or every two years, whichever comes first.

Required maintenance procedures and additional engine information is available in the *Ford LRG425 Operator Handbook* (Ford part number FPP 194-302).

Ford LRG 425 Operator Handbook	
Genie part number	84792

E-4
Perform Engine Maintenance - Deutz Models

NOTICE Engine specifications require that this procedure be performed every 3000 hours or two years, whichever comes first.

Required maintenance procedures and additional engine information is available in the *Deutz 1011F Operation Manual* (Deutz part number 0297 9683) or the *Deutz 2011 Operation Manual* (Deutz part number 0297 9929).

Deutz 1011F Operation Manual	
Genie part number	52883

Deutz 2011 Operation Manual	
Genie part number	84794

REV C

E-5
Perform Engine Maintenance - Deutz 2011F Models

NOTICE Engine specifications require that this procedure be performed every 12,000 hours.

Required maintenance procedures and additional engine information is available in the *Deutz 2011 Operation Manual* (Deutz part number 0297 9929).

Deutz 2011 Operation Manual
Genie part number 84794

E-6
Perform Engine Maintenance - Ford Models
(before serial number GS9003-41369)

NOTICE Engine specifications require that this procedure be performed every four years, maximum.

Required maintenance procedures and additional engine information is available in the *Ford LRG425 Operator Handbook* (Ford part number FPP 194-302).

Ford LRG 425 Operator Handbook
Genie part number 84792

Repair Procedures

Observe and Obey:

- ☑ Repair procedures shall be completed by a person trained and qualified on the repair of this machine.
- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating the machine.

Before Repairs Start:

- ☑ Read, understand and obey the safety rules and operating instructions in the appropriate operator's manual on your machine.
- ☑ Be sure that all necessary tools and parts are available and ready for use.
- ☑ Read each procedure completely and adhere to the instructions. Attempting shortcuts may produce hazardous conditions.
- ☑ Unless otherwise specified, perform each repair procedure with the machine in the following configuration:
  - · Machine parked on a firm, level surface
  - · Platform in the stowed position
  - · Key switch in the off position with the key removed
  - · The red Emergency Stop button in the off position at both ground and platform controls
  - · Wheels chocked
  - · All external AC power supply disconnected from the machine

About This Section

Most of the procedures in this section should only be performed by a trained service professional in a suitably equipped workshop. Select the appropriate repair procedure after troubleshooting the problem. Perform disassembly procedures to the point where repairs can be completed. To re-assemble, perform the disassembly steps in reverse order.

Symbols Legend

Safety alert symbol—used to alert personnel to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠DANGER Used to indicate the presence of an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠WARNING Used to indicate the presence of a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠CAUTION With safety alert symbol—used to indicate the presence of a potentially hazardous situation which, if not avoided, may cause minor or moderate injury.

CAUTION Without safety alert symbol—used to indicate the presence of a potentially hazardous situation which, if not avoided, may result in property damage.

NOTICE Used to indicate operation or maintenance information.

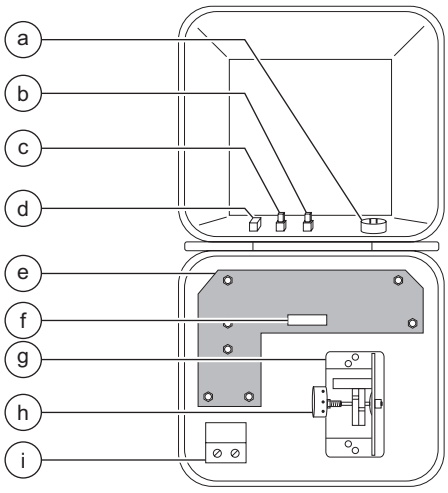
⊙ Indicates that a specific result is expected after performing a series of steps.

⊠ Indicates that an incorrect result has occurred after performing a series of steps.

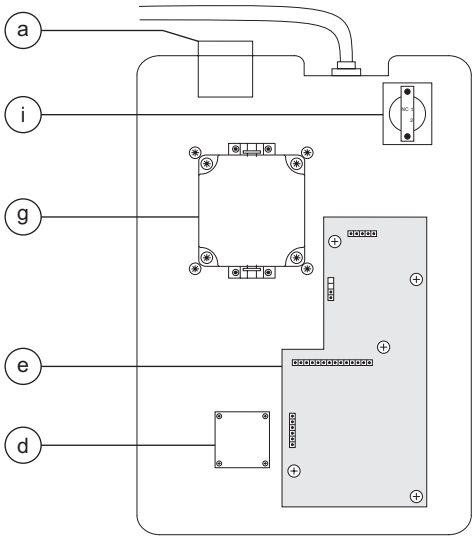
Platform Controls

REV D

The joystick controller is controlled by an ECM (Electronic Control Module) located behind the ground control panel. The ECM aids in troubleshooting by recognizing machine malfunctions and displaying fault codes on a LED display window at the ground controls. See the Troubleshooting section of this manual for a list of fault codes and additional information. The ECM is not user-serviceable. The joystick controller is calibrated at the factory and does not need to be adjusted. For further information or assistance, consult the Genie Industries Service Department.



Platform controls before serial number GS9003-41523



Platform controls after serial number GS9003-41522

a alarm H1
b function enable/high speed select button for platform up/down function BN12
c function enable/low speed select button for platform up/down function BN13
d platform up/down toggle switch TS20 OR platform up/down and outrigger up/down toggle switch TS21
e circuit board U3
f DIP switch SW25
g joystick controller JC1
h potentiometer
i red Emergency Stop button P2

1-1 Circuit Boards

How to Remove the Platform Controls Circuit Board

1 Push in the red Emergency Stop button to the off position at both the ground and platform controls.

2 Loosen the platform control box lid retaining fasteners. Open the control box lid.

3 Visually locate the circuit board mounted to the inside of the platform control box lid.

4 Secure the control box lid in a level position.

5 Tag and disconnect the wire connectors from the red Emergency Stop button.

6 Tag and disconnect the wire harness connectors from the platform controls circuit board.

⚠WARNING Electrocution hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

CAUTION Component damage hazard. Electrostatic discharge (ESD) can damage printed circuit board components. Maintain firm contact with a metal part of the machine that is grounded at all times when handling printed circuit boards OR use a grounded wrist strap.

NOTICE Depress the locking tab to disconnect the wire harness from the circuit board.

7 Remove the platform controls circuit board retaining fasteners.

8 Remove the platform controls circuit board from the platform control box lid.

1-2 Joystick Controller

Maintaining the joystick at the proper setting is essential to safe machine operation. The joystick should operate smoothly over its entire range of motion.

Machines after serial number GS9003-41522 are equipped with Hall-effect joysticks, which do not require calibration.

How to Calibrate the Joystick (before serial number GS9003-41523)

NOTICE If the joystick is out of calibration, fault code 30 will be present on the diagnostic display and the error indicator light will be illuminated at the platform controls.

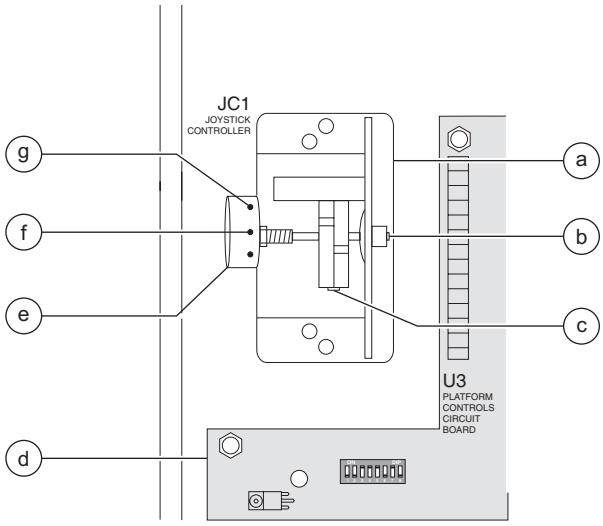
1 Turn the key switch to platform control and pull out the red Emergency Stop button to the on position at both the ground and platform controls.

2 Remove the platform control box lid retaining fasteners. Open the control box lid.

⚠WARNING Electrocution hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

PLATFORM CONTROLS REV D

3 Locate the potentiometer on the base of the joystick.



a joystick controller JC1
b potentiometer shaft slot
c potentiometer shaft set screw
d platform controls circuit board U3
e potentiometer
f brown wire
g purple wire

4 Using a volt meter set to read DC voltage, place the voltmeter negative lead on the purple wire. Place the volt meter positive lead on the brown wire.

⚠WARNING Electrocution hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

5 Loosen the set screw on the potentiometer shaft just enough to allow the shaft to rotate.

6 With the joystick in the center or neutral position, adjust the potentiometer shaft until 2.05V DC is displayed on the voltmeter. Tighten the set screw.

7 Move the joystick full stroke in both directions several times. Return the joystick to the center position.

⊙ Result: The voltmeter should read 2.05V DC.

⊠ Result: If the voltmeter does not read 2.05V DC, repeat steps 5 through 8.

NOTICE Do not activate the function enable switch.

8 Turn the key switch to the off position.

9 Wait a few seconds and then turn the key switch to platform control.

⊙ Result: The error indicator light on the top of the platform control box should not be illuminated and code 30 should not be present on the diagnostic display.

⊠ Result: If the error indicator light is illuminated or if code 30 is present on the diagnostic display, repeat this procedure beginning with step 5.

10 Turn the key switch to the off position.

11 Close the lid and install the fasteners.

1-3
Controller Adjustments
(before serial number GS9003-41523)

All machine function speeds are determined by the percentage of total ECM voltage output. The speeds of the following machine functions may be adjusted to compensate for wear in the hydraulic pump and drive motors.

- Raised drive speed
- Fast platform lift speed
- Platform lower speed
- Steer speed
- Platform settling speed

For further information or assistance, consult the Genie Industries Service Department.

⚠ DANGER Tip-over hazard. Do not adjust the lift and/or drive speed higher than specified in this procedure. Setting drive speed greater than specifications could cause the machine to tip over resulting in death or serious injury.

⚠ DANGER Tip-over hazard. This procedure must only be performed by a trained service professional. Attempting this procedure without the necessary skills will result in death or serious injury.

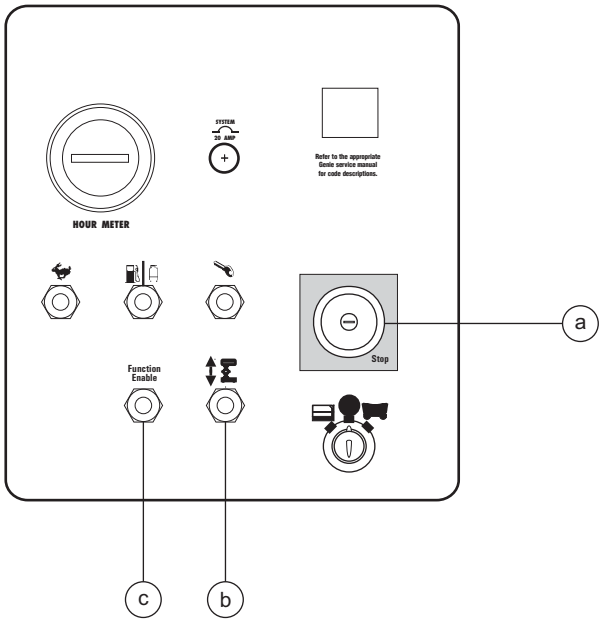
NOTICE Select a test area that is firm, level and free of obstructions.

How to
Determine the Revision Level

1 Turn the key switch to ground controls and pull out the red Emergency Stop buttons to the on position at both platform and ground controls.

2 Move and hold the function enable toggle switch and the platform up/down toggle switch in the down direction.

⊙ Result: The revision level of the ECM will appear in the LED display window.



a red Emergency Stop button P1
b platform up/down toggle switch TS66
c function enable toggle switch TS67

How to Adjust the Raised Drive Speed

⚠DANGER Tip-over hazard. Do not adjust the lift and/or drive speed higher than specified in this procedure. Setting drive speed greater than specifications could cause the machine to tip over resulting in death or serious injury.

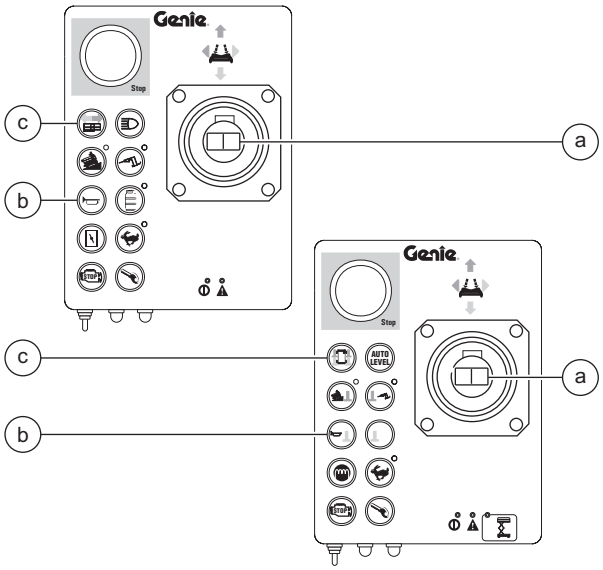
NOTICE The GS-5390 will not drive with the platform raised above 33 feet / 6.1 m.

1 Remove the platform controls from the platform and place the controls near the diagnostic display at the ground control panel.

2 Turn the key switch to the off position.

3 **Models without outriggers:** Press and hold the horn button and platform extend/retract enable button, then turn the key switch to platform controls.

Models with outriggers: Press and hold the horn button and the outrigger enable button, then turn the key switch to platform controls.



a steering rocker switch SW6
b horn button BN5
c platform extend/retract enable BN16
OR outrigger enable button BN16

4 **Models without outriggers:** The fault-code display window at the ground controls will show "PS". When you see this code, release the horn button and the platform extend/retract enable button.

Models with outriggers: The fault-code display window at the ground controls will show "PS". When you see this code, release the horn button and the outrigger enable button.

NOTICE The "PS" in the fault code display window indicates that the ECM is in the programming mode.

5 Press the horn button to show the maximum raised drive speed percentage.

6 To increase or decrease the raised drive speed, press and hold the horn button while using the steering rocker switch to adjust the function speed. Refer to Section 2, *Specifications*.

7 Release the horn button.

8 Turn the key switch to the off position to save the settings.

9 Check the raised drive speed of the machine. Refer to the Maintenance section B-16, *Test the Drive Speed - Raised Position*.

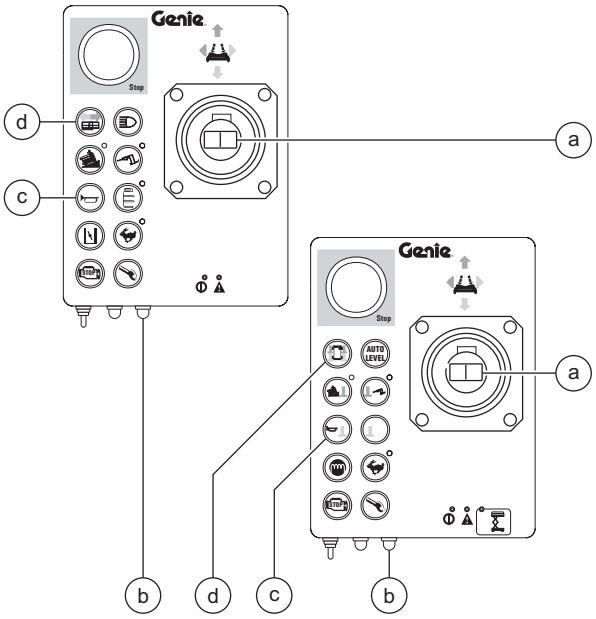
How to Adjust the Lift Speed

1 Remove the platform controls from the platform and place the controls near the diagnostic display at the ground control panel.

2 Turn the key switch to the off position.

3 **Models without outriggers:** Press and hold the horn button and platform extend/retract enable button, then turn the key switch to platform controls.

Models with outriggers: Press and hold the horn button and the outrigger enable button, then turn the key switch to platform controls.



a steering rocker switch SW6
b function enable/high speed select button BN12
c horn button BN5
d platform extend/retract enable BN16 OR outrigger enable button BN16

4 The fault-code display window at the ground controls will show "PS". When you see this code, release the horn button and the platform extend/retract enable button or outrigger enable button.

NOTICE The "PS" in the fault code display window indicates that the ECM is in the programming mode.

5 Press and hold the function enable/high speed select button to show the fast platform lift speed percentage in the fault-code display window.

6 To increase or decrease the fast platform lift speed, press and hold the function enable/high speed select button while using the steering rocker switch to adjust the function speed. Refer to Section 2, *Specifications*.

7 Release the function enable/high speed select button.

8 Turn the key switch to the off position to save the settings.

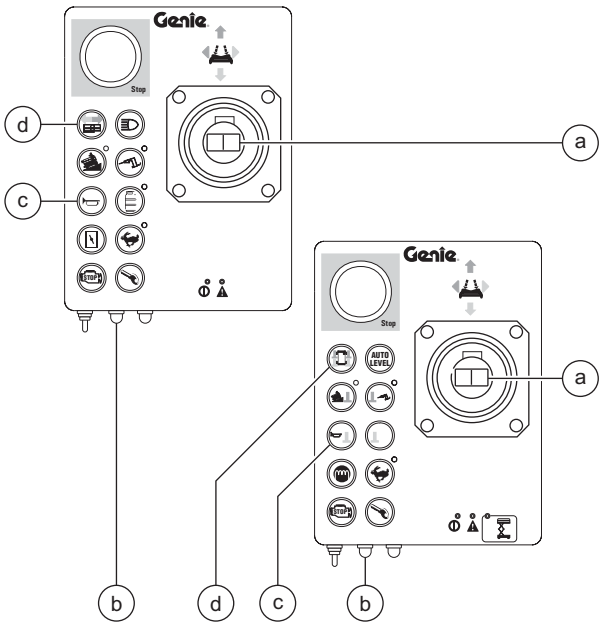
How to Adjust the Platform Lower Speed

1 Remove the platform controls from the platform and place the controls near the diagnostic display at the ground control panel.

2 Turn the key switch to the off position.

3 **Models without outriggers:** Press and hold the horn button and platform extend/retract enable button, then turn the key switch to platform control.

Models with outriggers: Press and hold the horn button and the outrigger enable button, then turn the key switch to platform control.



a steering rocker switch SW6
b function enable/low speed select button BN13
c horn button BN5
d platform extend/retract enable BN16 OR outrigger enable button BN16

4 The fault-code display window at the ground controls will show "PS". When you see this code, release the horn button and the platform extend/retract enable button or outrigger enable button.

NOTICE The "PS" in the fault code display window indicates that the ECM is in the programming mode.

5 Press and hold the function enable/low speed select button to show the platform lower speed percentage in the fault-code display window.

6 To increase or decrease the platform lower speed, press and hold the function enable/low speed select button while using the steering rocker switch to adjust the function speed. Refer to Section 2, *Specifications*.

7 Release the function enable/low speed select button.

8 Turn the key switch to the off position to save the settings.

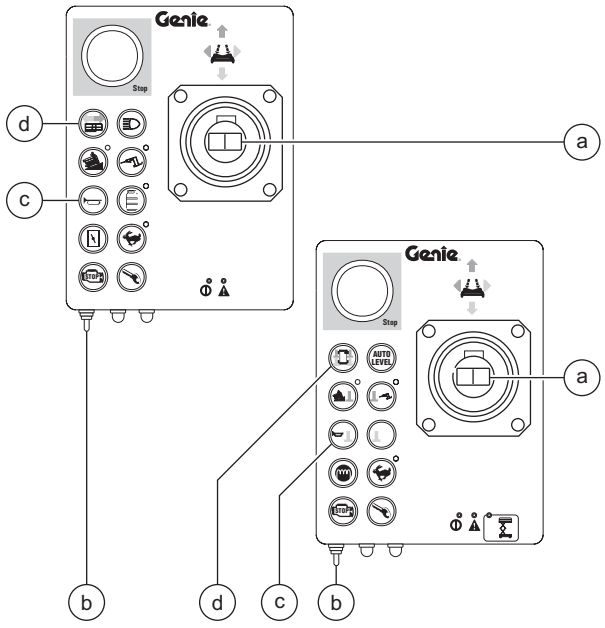
How to Adjust the Platform Settling Speed

1 Remove the platform controls from the platform and place the controls near the diagnostic display at the ground control panel.

2 Turn the key switch to the off position.

3 **Models without outriggers:** Press and hold the horn button and platform extend/retract enable button, then turn the key switch to platform control.

Models with outriggers: Press and hold the horn button and the outrigger enable button, then turn the key switch to platform control.



a steering rocker switch SW6
b platform up/down select switch TS20
c horn button BN5
d platform extend/retract enable BN16 OR outrigger enable button BN16

4 The fault-code display window at the ground controls will show "PS". When you see this code, release the horn button and the platform extend/retract enable button or outrigger enable button.

NOTICE The "PS" in the fault code display window indicates that the ECM is in the programming mode.

5 Press and hold the platform up/down select toggle switch in the down direction to show the platform settling speed percentage in the fault-code display window.

6 To increase or decrease the platform settling speed, press and hold the platform up/down select toggle switch in the down direction while using the steering rocker switch to adjust the function speed. Refer to Section 2, *Specifications*.

7 Release the platform up/down select toggle switch.

8 Turn the key switch to the off position to save the settings.

CAUTION Component Damage Hazard. The Platform Settling Speed is intended to slow the rate of platform descent just before the reaching the stowed position. Adjust the Platform Settling Speed until the Platform **Settling** Speed percentage is 3 to 5 points less than the Platform **Lowering** Speed percentage.

How to Adjust the Steer Speed

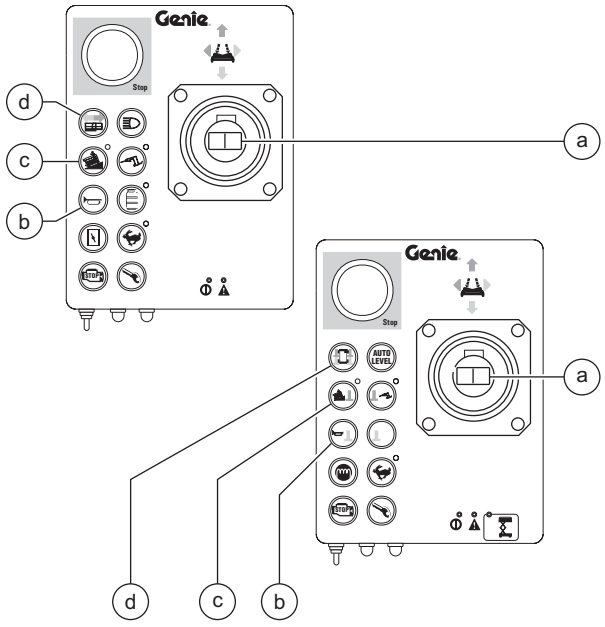
NOTICE The steering speed is not adjustable on machines with software revision B. See 1-3, *How to Determine the Revision Level.*

1 Remove the platform controls from the platform and place the controls near the diagnostic display at the ground control panel.

2 Turn the key switch to the off position.

3 **Models without outriggers:** Press and hold the horn button and platform extend/retract enable button, then turn the key switch to platform control.

Models with outriggers: Press and hold the horn button and the outrigger enable button, then turn the key switch to platform control.



a steering rocker switch SW6
b horn button BN5
c machine on incline button BN6
OR machine on incline/LF outrigger button BN17
d platform extend/retract enable BN16
OR outrigger enable button BN16

4 The fault-code display window at the ground controls will show "PS". When you see this code, release the horn button and the platform extend/retract enable button or outrigger enable button.

NOTICE The "PS" in the fault code display window indicates that the ECM is in the programming mode.

5 Press and hold the machine on incline button to show the steering speed percentage in the fault-code display window.

6 To increase or decrease the steering speed, press and hold the machine on incline button while using the steering rocker switch to adjust the function speed. Refer to Section 2, *Specifications*.

7 Release the machine on incline button.

8 Turn the key switch to the off position to save the settings.

1-4
Software Configuration
(before serial number GS9003-41523)

How to Configure the Software

The Electronic Control Module (ECM) contains programming for all configurations of the GS90.

Models before serial number GS9003-41523 can be adjusted to a different configuration by changing the combination of the DIP switch settings, located on the circuit board inside the platform control box. DIP switches have two positions - on or off. When reading the DIP switch code in the *DIP Switch Codes Chart* on the next page, the on and off are represented by the numbers 1 (on) and 0 (off).

⚠DANGER Tip-over hazard. Do not adjust the DIP switch settings to other than what is specified in this procedure. Exceeding specifications will cause death or serious injury.

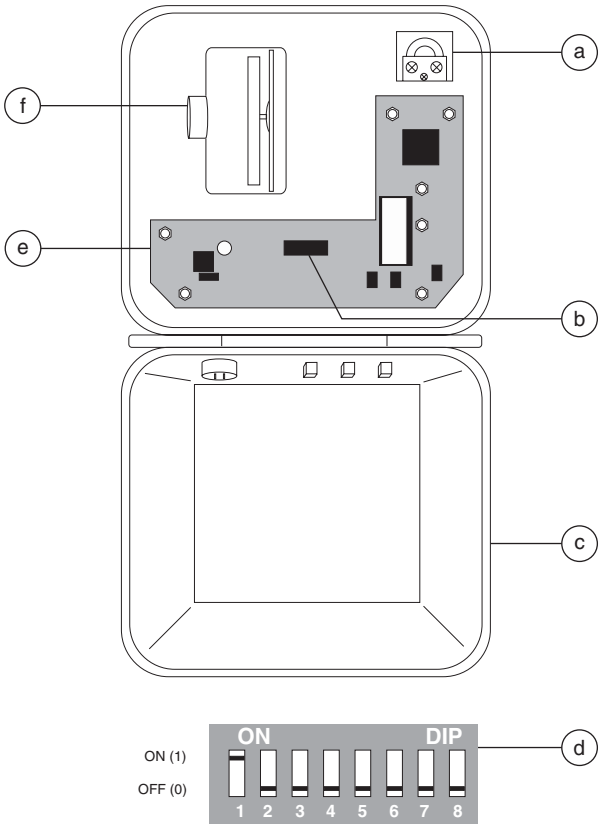
NOTICE If replacing the circuit board, note the toggle positions on the DIP switch. Set the DIP switch on the new circuit board to the same configuration as the old one.

1 Push in the red Emergency Stop button to the off position at the ground and platform controls. Turn the key switch to the off position.

2 Remove the fasteners securing the lid of the platform controls and open the platform control box.

3 Rotate the platform controller box in the position shown to correctly identify the configuration of the DIP switch settings.

4 Open the controller box lid and locate the DIP switch on the circuit board. Move the DIP switch settings to correspond with the configuration of the machine options, indicated in the chart. See 1-4, *DIP Switch Codes Chart.*



a red Emergency Stop button P2
b DIP switch SW25
c platform control box
d enlarged view of DIP switch SW25
e circuit board U3
f joystick controller JC1

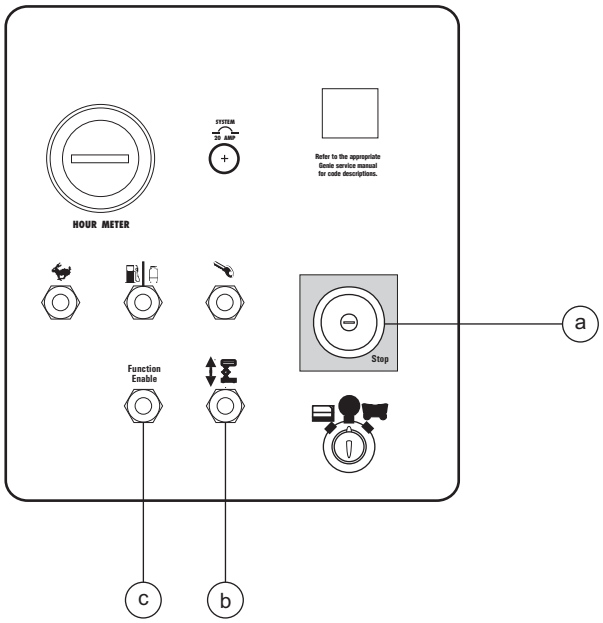
5 Apply dielectric grease to the DIP switch after setting the configuration.

6 Close the lid and install the platform control box lid fasteners.

7 To confirm the settings, pull out the red Emergency Stop button to the on position at both the ground and platform controls and turn the key switch to ground control. Do not start the engine.

8 Move and hold the platform up/down toggle switch in the up direction and activate the function enable toggle switch from the ground controls.

⊙ Result: The LED diagnostic readout window, located on the ground control panel, will display a configuration number without the dot illuminated. This configuration number indicates the current configuration of the machine.



a red Emergency Stop button P1
b platform up/down toggle switch TS66
c function enable toggle switch TS67

9 Release the toggle switches, push in the red Emergency Stop button to the off position at both the ground and platform controls and turn the key switch to the off position.

DIP Switch Function Definitions

NOTICE If replacing the circuit board, note the toggle positions on the DIP switches. Set the DIP switches on the new circuit board to the same configuration of the old one.

Gasoline/LPG: Indicates that the machine is gasoline/LPG powered.

Diesel: Indicates that the machine is diesel powered.

Motion Alarm: The motion alarm will sound when operating any function.

Lift/Drive Cut Out: This cuts out lift and drive functions when the machine exceeds the rating on the serial plate. Required for Europe and Australia before serial number 40820. Installed on all machines after serial number 40819.

Motion Beacon: The motion beacon option flashes only when operating a function.

Overload: This cuts out all functions when the pressure sensor is overloaded. The Emergency Stop button must be cycled before any function can be resumed. Required for Europe.

Descent Delay: This option halts descent at approximately 12 feet / 3.6 m. All controls must be released for 4 to 6 seconds before descent is re-enabled. Required for Europe.

No Simultaneous Operation: This does not allow the machine lift and drive functions to operate at the same time. Required for Europe.

DIP Switch Codes Chart

A • in the column indicate that the machine configuration includes this option.

Diagnostic Display Code	DIP Switch Code	Gasoline/LPG	Diesel	Motion Alarm	Lift/Drive Cut Out	Motion Beacon	Overload Sensor	Descent Delay	No Simultaneous Operation
01	01011010	•							
02	00111010		•						
04	01010001	•		•					
05	10100110		•	•					
07	01011011	•			•				
08	00111011		•		•				
10	01010000	•		•	•				
11	10100111		•	•	•				
13	01010100	•				•			
14	00110000		•			•			
16	00100100	•		•		•			
17	10100100		•	•		•			
19	01011000	•			•	•			
20	00111000		•		•	•			
22	00101100	•		•	•	•			
23	10101100		•	•	•	•			
25	01010011	•					•		
26	00110011		•				•		
28	00100101	•		•			•		
29	10100101		•	•			•		
31	01010111	•			•		•		
32	00110111		•		•		•		
34	00101001	•				•	•		
35	10101001		•			•	•		
37	01011100	•		•	•		•		
38	00111100		•	•	•		•		
40	00101101	•		•		•	•		
41	10101101		•	•		•	•		
43	01011111	•			•	•	•		
44	00111111		•		•	•	•		
46	00101111	•		•	•	•	•		
47	10101111		•	•	•	•	•		
49	01110000	•						•	
50	10000000		•					•	
52	01110001	•		•				•	
53	10000001		•	•				•	
55	01110010	•			•			•	
56	10000010		•		•			•	
58	10011111	•				•		•	
59	01111111		•			•		•	
61	01110111	•					•	•	
62	01111000		•				•	•	
64	10011000	•		•	•			•	
65	10011001		•	•	•			•	
67	01110011	•		•		•		•	
68	10001011		•	•		•		•	
70	10001101	•		•			•	•	
71	01111100		•	•			•	•	
73	10011011	•			•	•		•	
74	10000111		•		•	•		•	
76	01110100	•			•		•	•	
77	10010011		•		•		•	•	
79	01110110	•				•	•	•	
80	00011010		•			•	•	•	
82	10000100	•		•		•	•	•	
83	10001100		•	•		•	•	•	
85	01110101	•		•	•		•	•	
86	10000110		•	•	•		•	•	
88	10000101	•		•	•	•		•	
89	10011110		•	•	•	•		•	
91	10001000	•			•	•	•	•	
92	00011100		•		•	•	•	•	
94	01111011	•		•	•	•	•	•	
95	10011100		•	•	•	•	•	•	

Continued to the next page

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Diagnostic Display Code	DIP Switch Code	Gasoline/LPG	Diesel	Motion Alarm	Lift/Drive Cut Out	Motion Beacon	Overload Sensor	Descent Delay	No Simultaneous Operation
97	00010000	•							•
98	00010001		•						•
100	00010011	•		•					•
101	00010100		•	•					•
103	00010110	•			•				•
104	00010111		•		•				•
106	00011001	•		•	•				•
107	01111010		•	•	•				•
109	00101000	•				•			•
110	00011101		•			•			•
112	00011111	•		•		•			•
113	00000000		•	•		•			•
115	00000010	•			•	•			•
116	00000011		•		•	•			•
118	00000101	•		•	•	•			•
119	00000110		•	•	•	•			•
121	00001000	•					•		•
122	00001001		•				•		•
124	00001011	•		•			•		•
125	00001100		•	•			•		•
127	00001110	•			•		•		•
128	00001111		•		•		•		•
130	00100001	•				•	•		•
131	00100010		•			•	•		•
133	00100110	•		•	•		•		•
134	00100111		•	•	•		•		•
136	00101011	•		•		•	•		•
137	00101110		•	•		•	•		•
139	00110010	•			•	•	•		•
140	00110100		•		•	•	•		•
142	00110110	•		•	•	•	•		•
143	00111001		•	•	•	•	•		•

Diagnostic Display Code	DIP Switch Code	Gasoline/LPG	Diesel	Motion Alarm	Lift/Drive Cut Out	Motion Beacon	Overload Sensor	Descent Delay	No Simultaneous Operation
145	00111110	•						•	•
146	01000000		•					•	•
148	01000010	•		•				•	•
149	01000011		•	•				•	•
151	01000101	•			•			•	•
152	01000110		•		•			•	•
154	01001000	•				•		•	•
155	01001001		•			•		•	•
157	01001011	•					•	•	•
158	01001100		•				•	•	•
160	01001110	•		•	•			•	•
161	01001111		•	•	•			•	•
163	01010101	•		•		•		•	•
164	01010110		•	•		•		•	•
166	01011101	•		•			•	•	•
167	01011110		•	•			•	•	•
169	01100001	•			•	•		•	•
170	01100010		•		•	•		•	•
172	01100110	•			•		•	•	•
173	01100111		•		•		•	•	•
175	01101110	•				•	•	•	•
176	10100000		•			•	•	•	•
178	10100010	•		•		•	•	•	•
179	10100011		•	•		•	•	•	•
181	10101010	•		•	•		•	•	•
182	10101011		•	•	•		•	•	•
184	10110000	•		•	•	•		•	•
185	10110001		•	•	•	•		•	•
187	10110011	•			•	•	•	•	•
188	10110100		•		•	•	•	•	•
190	10110110	•		•	•	•	•	•	•
191	10110111		•	•	•	•	•	•	•

Platform Components

REV C

2-1 Platform

How to Remove the Platform

⚠WARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is required.

NOTICE Perform this procedure with the platform in the stowed position and the platform extension deck(s) fully retracted and locked in position.

1 Start the engine from the ground controls and raise the platform approximately 18 feet / 5.5 m from the ground.

2 **Before serial number 40351:** Release the safety arm latch, lift the safety arm and rotate down to a vertical position.

After serial number 40350: Release the safety arm latch, lift the safety arm and rotate to a vertical position. Lock the safety arm in position.

NOTICE Be sure that the safety arm is locked in the vertical position.

3 Lower the platform onto the safety arm. Turn the machine off.

⚠WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

4 Cut the zip ties that secure the power to platform wiring to the bottom of the platform.

CAUTION Component damage hazard. Be sure not to cut the power to platform wiring.

5 Cut the zip ties that secure the platform controls wiring to the bottom of the platform.

CAUTION Component damage hazard. Be sure not to cut the platform controls wiring.

6 Start the engine from the ground controls.

7 Raise the platform slightly and return the safety arm to the stowed position.

8 Lower the platform to the stowed position. Turn the machine off.

9 Locate the quick disconnect for the platform controls under the platform at the steer end of the machine.

10 Tag and disconnect the platform controls from the control cable at the steer end of the machine.

11 Remove the platform control box from the platform and lay it off to the side.

12 Remove the mounting fasteners that hold the platform controls quick disconnect plug to the platform.

13 Lay the platform controls wiring off to the side.

CAUTION Component damage hazard. The platform controls wiring can be damaged if it is kinked or pinched.

14 Remove the AC power to platform outlet bracket mounting fasteners.

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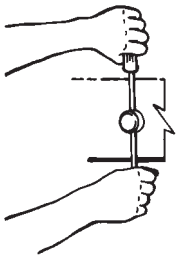
15 Remove the AC outlet box and bracket from the platform and lay them off to the side. Do not disconnect the wiring.

CAUTION Component damage hazard. The AC power to platform wiring can be damaged if it is kinked or pinched.

NOTICE If your machine is equipped with an air line to platform option, the air line must be disconnected from the platform before removal.

16 Remove the pin retaining fasteners from the platform centering links located under the platform on both sides of the machine. Do not remove the pins.

17 Place a rod through the platform centering link pin and twist to remove the pin. Rest the platform centering link on the scissor arm.



18 Repeat step 17 for the platform centering link pivot pin on the other side of the machine.

19 Place a lifting strap from an overhead crane under the platform at the steer end of the machine for support. Do not apply any lifting pressure.

CAUTION Component damage hazard. The platform railings can be damaged if used to lift the platform. Do not attach the lifting straps to the platform railings.

20 Place a lifting strap from a second overhead crane under the platform at the non-steer end of the machine for support. Do not apply any lifting pressure.

CAUTION Component damage hazard. The platform railings can be damaged if used to lift the platform. Do not attach the lifting straps to the platform railings.

21 Remove the pin retaining fasteners from each platform slider block pivot pin. Do not remove the pins.

22 Use a slide hammer to remove each platform slider block pivot pin.

⚠WARNING Crushing hazard. The platform will fall when the platform slider block pivot pins are removed if not properly supported by the overhead cranes.

23 Secure the platform slider blocks to the platform to prevent them from sliding out of the channel when the platform is removed from the machine.

24 Carefully lift the platform off of the machine and place it on a structure capable of supporting it.

⚠DANGER Crushing hazard. The platform will become unbalanced and fall when it is removed from the machine if not properly supported by the overhead cranes.

⚠WARNING Bodily injury hazard. The platform slider blocks could fall out from under the platform if they are not secured to the platform.

2-2
Platform Extension Deck

How to Remove a Platform Extension Deck

NOTICE Perform this procedure with the platform in the stowed position and the platform extension deck(s) fully retracted and locked in position.

NOTICE If the machine is equipped with the dual extension deck option, repeat this procedure for the other platform extension deck.

1 **Steer end extension deck:** Remove the platform controls from the platform and lay them off to the side of the machine.

2 Remove the retaining pins from the four black plastic railing guides. Lower the railing guides in the down direction.

3 Remove the mounting fasteners from the platform extension deck stop brackets at both sides of the deck.

NOTICE The platform extension deck stop brackets are located above the platform V-roller wheels.

4 At the platform extension deck to be removed, position a fork lift with the forks even with the bottom of the platform extension deck.

5 Lift the platform extension deck lock handle.

6 Carefully slide the platform extension deck out until the platform extension deck makes contact with the carriage on the forklift.

7 Attach a strap from the platform extension deck railings to the carriage on the forklift to help support the platform extension deck.

8 Remove the three V-roller and extension deck lock bracket mounting fasteners from the extension deck at the tank side of the machine.

9 Carefully pull the V-roller and extension deck lock assembly out of the extension deck.

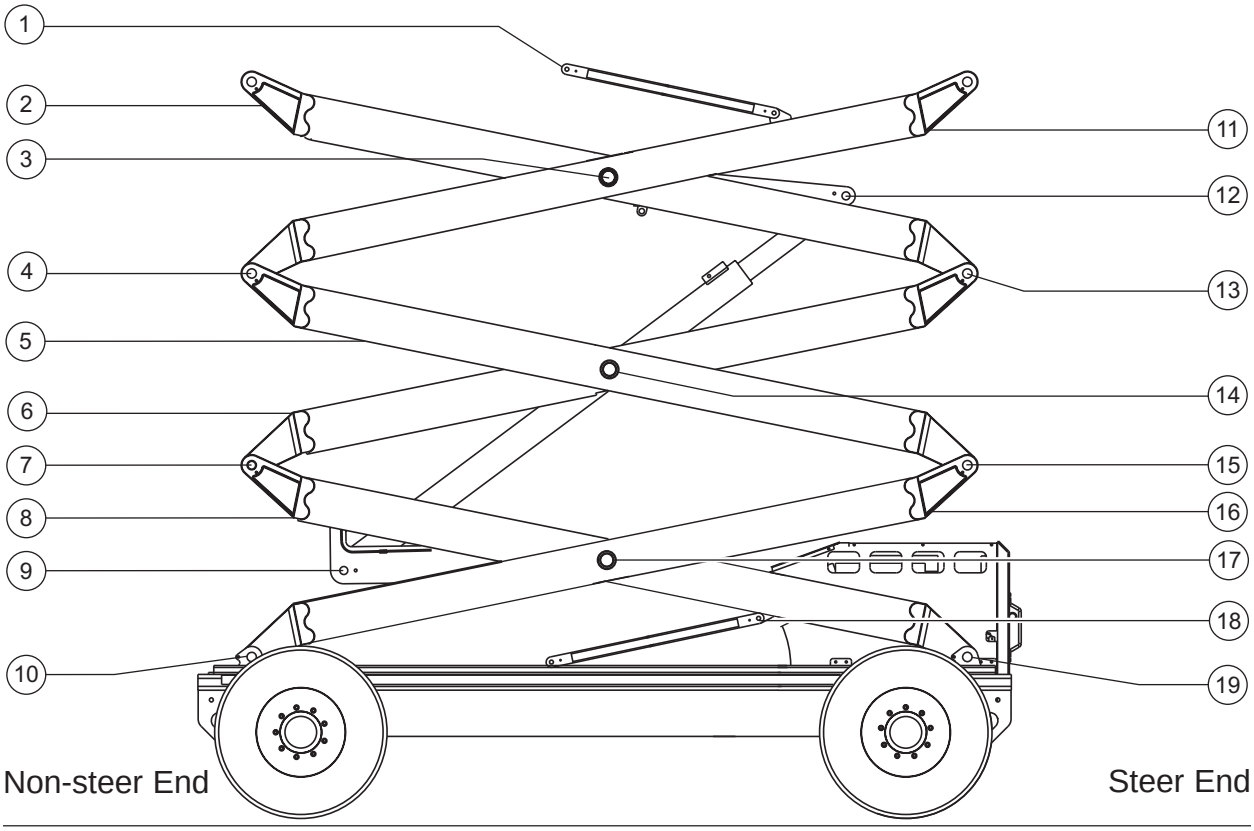
10 Remove the fasteners from the roller wheels located under the platform extension deck. Remove the roller wheels.

11 Carefully slide the platform extension deck out of the platform and place it on a structure capable of supporting it.

⚠WARNING Crushing hazard. The platform extension deck could become unbalanced and fall when removed from the machine if not properly supported and secured to the forklift.

Scissor Components

REV D



1 Platform centering link
2 Number 3 inner arm
3 Number 3 center pivot pins
4 Number 3 pivot pins (non-steer end)
5 Number 2 outer arm
6 Number 2 inner arm
7 Number 2 pivot pins (non-steer end)
8 Number 1 inner arm
9 Lift cylinder barrel-end pivot pin
10 Number 1 pivot pins (non-steer end)
11 Number 3 outer arm
12 Lift cylinder rod-end pivot pin
13 Number 3 pivot pins (steer end)
14 Number 2 center pivot pins
15 Number 2 pivot pins (steer end)
16 Number 1 outer arm
17 Number 1 center pivot pins
18 Chassis centering link
19 Number 1 pivot pins (steer end)

3-1
Scissor Assembly , GS-3390

How to Disassemble the Scissor Assembly, GS-3390

⚠WARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is required.

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications*.

1 Remove the platform. See 2-1, *How to Remove the Platform.*

2 Remove the cables from the platform centering link (index #1) at the hydraulic tank side of the machine.

3 Remove the pin retaining fasteners from the lift cylinder rod-end pivot pin (index #12). Do not remove the pin.

4 Attach a lifting strap from an overhead crane to the lifting eye at the rod end of the lift cylinder.

5 Use a soft metal drift to remove the lift cylinder rod-end pivot pin (index #12). Lower the rod end of the lift cylinder down onto the number 2 inner arm (index #6).

⚠WARNING Crushing hazard. The lift cylinder could fall when the lift cylinder rod-end pivot pin is removed if not properly supported by the overhead crane.

6 Tag, disconnect and plug the hydraulic hoses from the lift cylinder. Cap the fittings on the cylinder.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

7 Cut the zip ties attaching the hydraulic hoses to the lift cylinder. Lay the hoses out of the way.

CAUTION Component damage hazard. Hoses can be damaged if they are kinked or pinched.

8 Remove the cables from the number 2 inner arm (index #6) and lay the cables off to the side.

CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.

9 Remove the pin retaining fasteners from the cable tray pivot pin at the number 3 inner arm (index #2).

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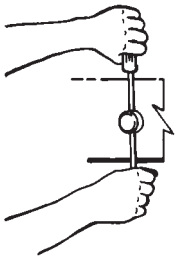
10 Place a rod through the cable tray pivot pin and twist to remove the pin. Lower the cable tray down.

CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.



11 Secure both ends of the number 3 inner and outer arms (index #2 and #11) together with a strap or other suitable device.

12 Attach a lifting strap from an overhead crane to the number 3 inner and outer arms (index #2 and #11) at the steer end of the machine. Do not apply any lifting pressure.

13 Attach a lifting strap from an overhead crane to the number 3 inner and outer arms (index #2 and #11) at the non-steer end of the machine. Do not apply any lifting pressure.

14 Remove the pin retaining fasteners from both number 3 pivot pins (index #4) at the non-steer end of the machine. Do not remove the pins.

15 Remove the pin retaining fasteners from both number 3 pivot pins (index #13) at the steer end of the machine. Do not remove the pins.

16 Use a slide hammer to remove both number 3 pivot pins (index #4) from the non-steer end of the machine.

17 Use a slide hammer to remove both number 3 pivot pins (index #13) from the steer end of the machine.

18 Carefully remove the number 3 inner and outer arms (index #2 and #11) from the machine.

⚠WARNING Crushing hazard. The number 3 inner and outer arms could become unbalanced and fall when they are removed from the machine if not properly supported by the overhead crane.

NOTICE If further disassembly of the scissor arm pair is required, see *How to Disassemble a Scissor Arm Pair.*

19 Secure the non-steer end of the number 2 inner and outer arms (index #5 and #6) and the non-steer end of the number 1 inner and outer arms (index #8 and #16) together with a strap or other suitable device.

20 Attach a lifting strap from an overhead crane to the number 1 outer arm (index #16) at the non-steer end of the machine. Do not apply any lifting pressure.

21 Remove the pin retaining fasteners from the number 1 pivot pins (index #10) at the non-steer end of the machine.

22 Use a slide hammer to remove both number 1 pivot pins (index #10) from the non-steer end of the machine.

23 Carefully lift the number 1 outer arm at the non-steer end approximately 15 inches / 40 cm.

24 Place a 6 x 6 x 32 inch / 15 x 15 x 80 cm long block across both sides of the chassis under the barrel end of the lift cylinder.

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25 Lower the number 1 outer arm (index #16) onto the block.

⚠WARNING Crushing hazard. Keep hands clear of moving parts when lowering the arms onto the block.

26 Attach a lifting strap from an overhead crane to the lifting eyes on the lift cylinder.

27 Remove the lift cylinder barrel-end pivot pin retaining fasteners.

28 Use a soft metal drift to remove the lift cylinder barrel-end pivot pin (index #9).

29 Carefully remove the lift cylinder from the machine.

⚠WARNING Crushing hazard. The lift cylinder could become unbalanced and fall when it is removed from the machine if not properly supported by the overhead crane.

30 Carefully lift the number 1 outer arm (index #16) approximately 2 inches / 5 cm and remove the block.

31 Lower the number 1 outer arm (index #16) onto the slide blocks.

⚠WARNING Crushing hazard. Keep hands clear of moving parts when lowering the arms onto the blocks.

32 Secure the number 1 outer arm (index #16) to the slide blocks.

33 Remove the strap installed in step 19.

34 Support the cable tray with an overhead crane.

35 Remove the pin retaining fasteners from the cable tray pivot pin at the cross tube of the number 2 inner arm (index #6).

36 Place a rod through the cable tray pivot pin and twist to remove the pin. Lower the cable tray onto the number 1 inner arm (index #8).

⚠WARNING Crushing hazard. The cable tray may fall if not properly supported by the overhead crane.

CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.

37 Secure both ends of the number 2 inner and outer arms (index #5 and #6) together with a strap or other suitable device.

38 Attach a lifting strap from an overhead crane to the number 2 inner and outer arms (index #5 and #6) at the steer end of the machine. Do not apply any lifting pressure.

39 Attach a lifting strap from an overhead crane to the number 2 inner and outer arms (index #5 and #6) at the non-steer end of the machine. Do not apply any lifting pressure.

40 Remove the pin retaining fasteners from both number 1 pivot pins (index #10) at the non-steer end of the machine. Do not remove the pins.

41 Remove the pin retaining fasteners from both number 1 pivot pins (index #19) at the steer end of the machine. Do not remove the pins.

42 Use a slide hammer to remove both number 1 pivot pins (index #10) from the non-steer end of the machine.

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43 Use a slide hammer to remove both number 2 pivot pins (index #15) from the steer end of the machine.

44 Carefully remove the number 2 inner and outer arms (index #5 and #6) from the machine.

⚠WARNING Crushing hazard. The number 2 inner and outer arms could become unbalanced and fall when they are removed from the machine if not properly supported by the overhead crane.

NOTICE If further disassembly of the scissor arm pair is required, see *How to Disassemble a Scissor Arm Pair.*

45 Remove the cables from the number 1 inner arm (index #8).

46 Secure both ends of the number 1 inner and outer arms (index #8 and #16) together with a strap or other suitable device.

47 Attach a lifting strap from an overhead crane to the number 1 inner and outer arms (index #8 and #16) at the steer end of the machine. Do not apply any lifting pressure.

48 Attach a lifting strap from an overhead crane to the number 1 inner and outer arms (index #8 and #16) at the non-steer end of the machine. Do not apply any lifting pressure.

49 Remove the pin retaining fasteners from both chassis centering link pivot pins (index #18) at the number 1 inner arm.

50 Place a rod through each chassis centering link pivot pin and twist to remove the pin. Rest the centering links on the chassis.

51 Remove the pin retaining fasteners from the number 1 inner arm slide blocks (index #19) at the steer end of the machine.

52 Use a slide hammer to remove the number 1 inner arm slide block pivot pins (index #19).

53 Use a slide hammer to remove the number 1 outer arm slide block pivot pins (index #19) at the non-steer end of the machine.

54 Carefully remove the number 1 inner and outer arms (index #8 and #16) from the machine.

⚠WARNING Crushing hazard. The number 1 inner and outer arms could become unbalanced and fall when they are removed from the machine if not properly supported by the overhead crane.

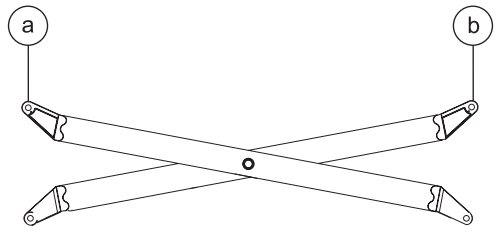
NOTICE If further disassembly of the scissor arm pair is required, see *How to Disassemble a Scissor Arm Pair.*

How to Disassemble a Scissor Arm Pair

⚠WARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is required.

1 Attach a lifting strap from an overhead crane to the end of the outer arm.

NOTICE Attach the lifting strap to the end of the scissor arm that has the casting pointing upwards.



a outer arm
b inner arm

2 Attach a lifting strap from a second overhead crane to the end of the inner arm.

NOTICE Attach the lifting strap to the end of the scissor arm that has the casting pointing upwards.

3 Raise the scissor arms with the overhead cranes approximately 12 inches / 30 cm.

4 Place a 12 inch / 30 cm block under the center of the scissor arm pair. Lower the scissor arm pair onto the block.

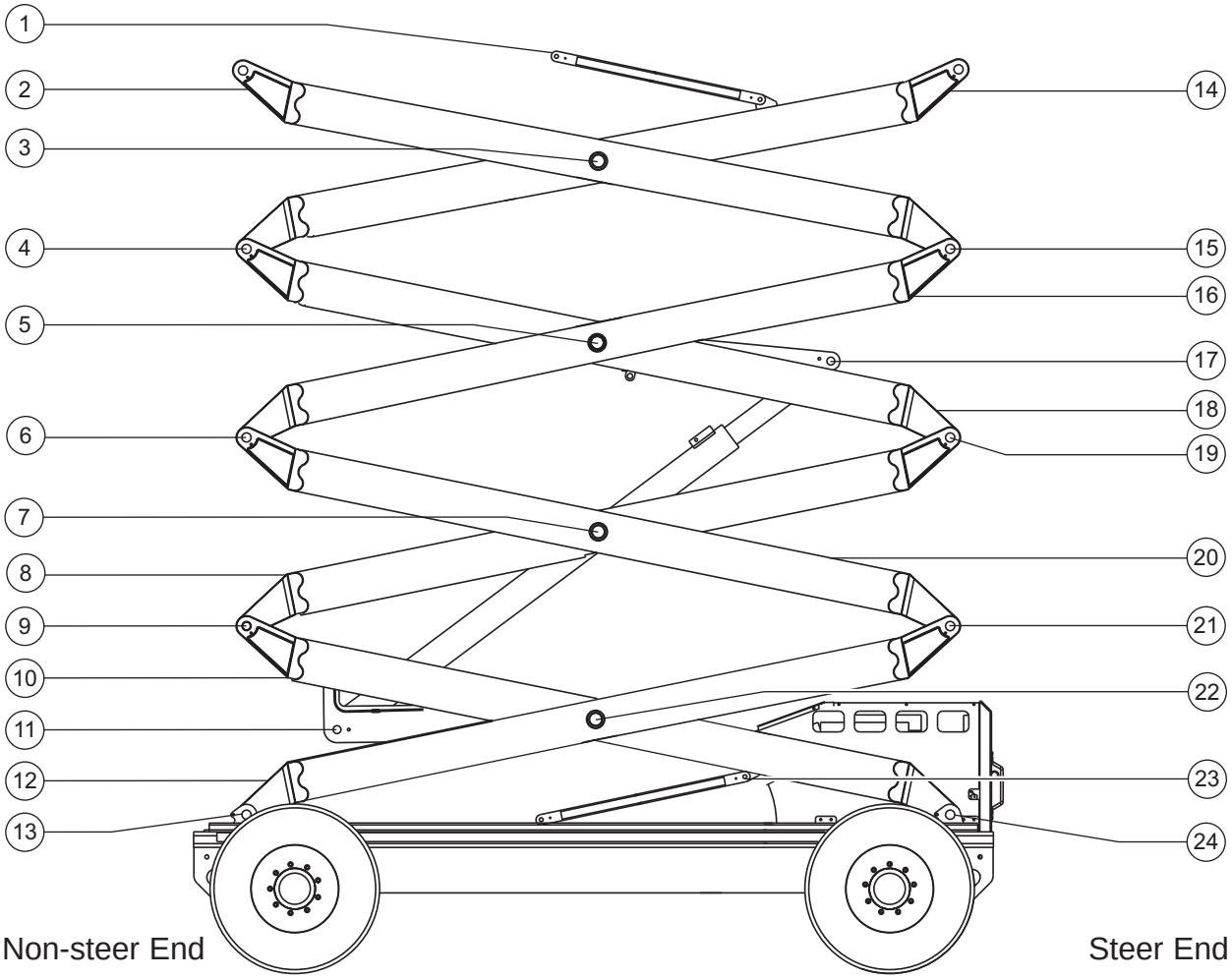
5 Remove the external snap rings from both center pivot pins.

6 Use a soft metal drift to remove both center pins.

7 Carefully separate the scissor arm pair.

⚠WARNING Crushing hazard. The scissor arms could become unbalanced and fall if not properly supported by the overhead cranes.

SCISSOR COMPONENTS REV D



1 Platform centering link
2 Number 4 outer arm
3 Number 4 center pivot pins
4 Number 4 pivot pins (non-steer end)
5 Number 3 center pivot pins
6 Number 3 pivot pins (non-steer end)
7 Number 2 center pivot pins
8 Number 2 inner arm
9 Number 2 pivot pins (non-steer end)
10 Number 1 inner arm
11 Lift cylinder barrel-end pivot pin
12 Number 1 outer arm
13 Number 1 pivot pins (non-steer end)
14 Number 4 inner arm
15 Number 4 pivot pins (steer end)
16 Number 3 outer arm
17 Lift cylinder rod-end pivot pin
18 Number 3 inner arm
19 Number 3 pivot pins (steer end)
20 Number 2 outer arm
21 Number 2 pivot pins (steer end)
22 Number 1 center pivot pins
23 Chassis centering link
24 Number 1 pivot pins (steer end)

3-2
Scissor Assembly, GS-4390

How to Disassemble the Scissor Assembly, GS-4390

⚠WARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is required.

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications*.

Before serial number 41073:

1 Remove the platform. See 2-1, *How to Remove the Platform.*

2 Remove the cables from the platform centering link (index #1) at the hydraulic tank side of the machine.

3 Remove the cables from the number 4 inner arm (index #13) and lay the cables off to the side.

CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.

4 Secure both ends of the number 4 inner and outer arms (index #14 and #2) together with a strap or other suitable device.

5 Attach a lifting strap from an overhead crane to the number 4 inner and outer arms (index #14 and #2) at the steer end of the machine. Do not apply any lifting pressure.

6 Attach a lifting strap from an overhead crane to the number 4 inner and outer arms (index #14 and #2) at the non-steer end of the machine. Do not apply any lifting pressure.

7 Remove the pin retaining fasteners from both number 4 pivot pins (index #4) at the non-steer end of the machine. Do not remove the pins.

8 Remove the pin retaining fasteners from both number 4 pivot pins (index #15) at the steer end of the machine. Do not remove the pins.

9 Use a slide hammer to remove both number 4 pivot pins (index #4) from the non-steer end of the machine.

10 Use a slide hammer to remove both number 4 pivot pins (index #15) from the steer end of the machine.

11 Carefully remove the number 4 inner and outer arms (index #14 and #2) from the machine.

⚠WARNING Crushing hazard. The number 4 inner and outer arms could become unbalanced and fall when they are removed from the machine if not properly supported by the overhead crane.

NOTICE If further disassembly of the scissor arm pair is required, see *How to Disassemble a Scissor Arm Pair.*

12 Remove the pin retaining fasteners from the lift cylinder rod-end pivot pin (index #17). Do not remove the pin.

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13 Attach a lifting strap from an overhead crane to the lifting eye at the rod end of the lift cylinder.

14 Use a soft metal drift to remove the lift cylinder rod-end pivot pin (index #17). Lower the rod end of the lift cylinder down.

⚠WARNING Crushing hazard. The lift cylinder could fall when the lift cylinder rod-end pivot pin is removed if not properly supported by the overhead crane.

15 Block the steer end wheels and center a lifting jack of ample capacity under the non-steer end of the drive chassis.

16 Loosen the wheel lug nuts on one of the non-steer wheels. Do not remove them.

17 Raise the machine approximately 2 inches / 5 cm. Place blocks under the chassis for support.

⚠WARNING Crushing hazard. The chassis will fall if not properly supported.

18 Remove the wheel lug nuts. Remove the tire and wheel assembly.

19 Tag, disconnect and plug the hydraulic hoses from the lift cylinder. Cap the fittings on the cylinder.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

20 Cut the zip ties attaching the hydraulic hoses to the lift cylinder. Lay the hoses out of the way.

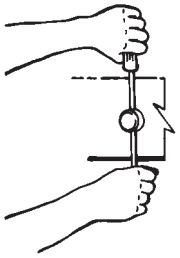
CAUTION Component damage hazard. Hoses can be damaged if they are kinked or pinched.

21 Remove the cables from the number 3 inner arm (index #18) and lay the cables off to the side.

CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.

22 Remove the pin retaining fasteners from the cable tray pivot pin at the number 3 inner arm.

23 Place a rod through the cable tray pivot pin and twist to remove the pin. Lower the cable tray down.



CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.

24 Secure both ends of the number 3 inner and outer arms (index #18 and #16) together with a strap or other suitable device.

25 Attach a lifting strap from an overhead crane to the number 3 inner and outer arms (index #18 and #16) at the steer end of the machine. Do not apply any lifting pressure.

26 Attach a lifting strap from an overhead crane to the number 3 inner and outer arms (index #18 and #16) at the non-steer end of the machine. Do not apply any lifting pressure.

27 Remove the pin retaining fasteners from both number 3 pivot pins (index #6) at the non-steer end of the machine. Do not remove the pins.

28 Remove the pin retaining fasteners from both number 3 pivot pins (index #19) at the steer end of the machine. Do not remove the pins.

29 Use a slide hammer to remove both number 3 pivot pins (index #6) from the non-steer end of the machine.

30 Use a slide hammer to remove both number 3 pivot pins (index #19) from the steer end of the machine.

31 Carefully remove the number 3 inner and outer arms (index #18 and #16) from the machine.

⚠WARNING Crushing hazard. The number 3 inner and outer arms could become unbalanced and fall when they are removed from the machine if not properly supported by the overhead crane.

NOTICE If further disassembly of the scissor arm pair is required, see *How to Disassemble a Scissor Arm Pair.*

32 Attach a lifting strap from an overhead crane to the lifting eyes on the lift cylinder.

33 Remove the pin retaining fasteners from the lift cylinder barrel-end pivot pin (index #11).

34 Use a soft metal drift to remove the lift cylinder barrel-end pivot pin (index #11).

35 Carefully remove the lift cylinder from the machine.

⚠WARNING Crushing hazard. The lift cylinder could become unbalanced and fall when it is removed from the machine if not properly supported by the overhead crane.

36 Remove the cables from the number 2 inner arm (index #8).

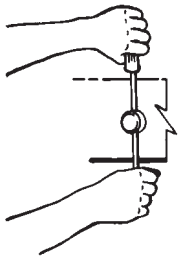
37 Support the cable tray with an overhead crane.

38 Remove the pin retaining fasteners from the cable tray pivot pin at the cross tube of the number 2 inner arm (index #8).

39 Place a rod through the cable tray pivot pin and twist to remove the pin. Lower the cable tray onto the number 1 inner arm (index #10).

⚠CAUTION Crushing hazard. The cable tray may fall if not properly supported by the overhead crane.

CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.



40 Secure both ends of the number 2 inner and outer arms (index #8 and #20) together with a strap or other suitable device.

41 Attach a lifting strap from an overhead crane to the number 2 inner and outer arms (index #8 and #20) at the steer end of the machine. Do not apply any lifting pressure.

42 Attach a lifting strap from an overhead crane to the number 2 inner and outer arms (index #8 and #20) at the non-steer end of the machine. Do not apply any lifting pressure.

43 Remove the pin retaining fasteners from both number 2 pivot pins (index #9) at the non-steer end of the machine. Do not remove the pins.

44 Remove the pin retaining fasteners from both number 2 pivot pins (index #21) at the steer end of the machine. Do not remove the pins.

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45 Use a slide hammer to remove both number 2 pivot pins (index #9) from the non-steer end of the machine.

46 Use a slide hammer to remove both number 2 pivot pins (index #21) from the steer end of the machine.

47 Carefully remove the number 2 inner and outer arms (index #8 and #20) from the machine.

⚠WARNING Crushing hazard. The number 2 inner and outer arms could become unbalanced and fall when they are removed from the machine if not properly supported by the overhead crane.

NOTICE If further disassembly of the scissor arm pair is required, see *How to Disassemble a Scissor Arm Pair.*

48 Remove the cables and hydraulic hoses from the number 1 inner arm (index #10) and lay them off to the side.

CAUTION Component damage hazard. Cables and hoses can be damaged if they are kinked or pinched.

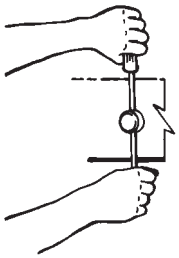
49 Secure both ends of the number 1 inner and outer arms (index #10 and #12) together with a strap or other suitable device.

50 Attach a lifting strap from an overhead crane to the number 1 inner and outer arms (index #10 and #12) at the steer end of the machine. Do not apply any lifting pressure.

51 Attach a lifting strap from an overhead crane to the number 1 inner and outer arms (index #10 and #12) at the non-steer end of the machine. Do not apply any lifting pressure.

52 Remove the pin retaining fasteners from both chassis centering link pivot pins (index #23) at the number 1 inner arm.

53 Place a rod through each chassis centering link pivot pin and twist to remove the pin. Rest the centering links on the chassis.



54 Remove the pin retaining fasteners from the number 1 inner arm slide block pivot pins (index #24) at the steer end of the machine.

55 Use a slide hammer to remove the number 1 inner arm slide block pivot pins (index #24).

56 Remove the pin retaining fasteners from the number 1 outer arm slide block pivot pins (index #13) at the non-steer end of the machine.

57 Use a slide hammer to remove the number 1 outer arm slide block pivot pins (index #13).

58 Carefully remove the number 1 inner and outer arms (index #10 and #12) from the machine.

⚠WARNING Crushing hazard. The number 1 inner and outer arms could become unbalanced and fall when they are removed from the machine if not properly supported by the overhead crane.

NOTICE If further disassembly of the scissor arm pair is required, see *How to Disassemble a Scissor Arm Pair.*

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After serial number 41072:

1 Remove the platform. See 2-1, *How to Remove the Platform.*

2 Remove the cables from the platform centering link (index #1) at the hydraulic tank side of the machine.

3 Remove the cables from the number 4 inner arm (index #14) and lay the cables off to the side.

CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.

4 Secure both ends of the number 4 inner and outer arms (index #14 and #2) together with a strap or other suitable device.

5 Attach a lifting strap from an overhead crane to the number 4 inner and outer arms (index #14 and #2) at the steer end of the machine. Do not apply any lifting pressure.

6 Attach a lifting strap from an overhead crane to the number 4 inner and outer arms (index #14 and #2) at the non-steer end of the machine. Do not apply any lifting pressure.

7 Remove the pin retaining fasteners from both number 4 pivot pins (index #4) at the non-steer end of the machine. Do not remove the pins.

8 Remove the pin retaining fasteners from both number 4 pivot pins (index #15) at the steer end of the machine. Do not remove the pins.

9 Use a slide hammer to remove both number 4 pivot pins (index #4) from the non-steer end of the machine.

10 Use a slide hammer to remove both number 4 pivot pins (index #15) from the steer end of the machine.

11 Carefully remove the number 4 inner and outer arms (index #14 and #2) from the machine.

⚠WARNING Crushing hazard. The number 4 inner and outer arms could become unbalanced and fall when they are removed from the machine if not properly supported by the overhead crane.

NOTICE If further disassembly of the scissor arm pair is required, see *How to Disassemble a Scissor Arm Pair.*

12 Remove the pin retaining fasteners from the lift cylinder rod-end pivot pin (index #17). Do not remove the pin.

13 Attach a lifting strap from an overhead crane to the lifting eye at the rod end of the lift cylinder.

14 Use a soft metal drift to remove the lift cylinder rod-end pivot pin (index #17). Lower the rod end of the lift cylinder down.

⚠WARNING Crushing hazard. The lift cylinder could fall if not properly supported when the pin is removed.

15 Block the steer end wheels and center a lifting jack of ample capacity under the non-steer end of the drive chassis.

16 Loosen the wheel lug nuts on one of the non-steer wheels. Do not remove them.

17 Raise the machine approximately 2 inches / 5 cm. Place blocks under the chassis for support.

⚠WARNING Crushing hazard. The chassis will fall if not properly supported.

18 Remove the wheel lug nuts. Remove the tire and wheel assembly.

SCISSOR COMPONENTS REV D

19 Tag, disconnect and plug the hydraulic hoses from the lift cylinder. Cap the fittings on the cylinder.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

20 Cut the zip ties attaching the hydraulic hoses to the lift cylinder. Lay the hoses out of the way.

CAUTION Component damage hazard. Hoses can be damaged if they are kinked or pinched.

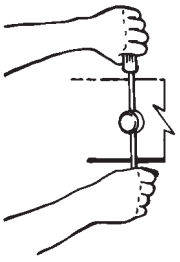
21 Remove the cables from the number 3 inner arm (index #18) and lay the cables off to the side.

CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.

22 Remove the pin retaining fasteners from the cable tray pivot pin at the number 3 inner arm.

23 Place a rod through the cable tray pivot pin and twist to remove the pin. Lower the cable tray down.

CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.



24 Secure both ends of the number 3 inner and outer arms (index #18 and #16) together with a strap or other suitable device.

25 Attach a lifting strap from an overhead crane to the number 3 inner and outer arms (index #18 and #16) at the steer end of the machine. Do not apply any lifting pressure.

26 Attach a lifting strap from an overhead crane to the number 3 inner and outer arms (index #18 and #16) at the non-steer end of the machine. Do not apply any lifting pressure.

27 Remove the pin retaining fasteners from both number 3 pivot pins (index #6) at the non-steer end of the machine. Do not remove the pins.

28 Remove the pin retaining fasteners from both number 3 pivot pins (index #19) at the steer end of the machine. Do not remove the pins.

29 Use a slide hammer to remove both number 3 pivot pins (index #6) from the non-steer end of the machine.

30 Use a slide hammer to remove both number 3 pivot pins (index #19) from the steer end of the machine.

31 Carefully remove the number 3 inner and outer arms (index #18 and #16) from the machine.

⚠WARNING Crushing hazard. The number 3 inner and outer arms could become unbalanced and fall when they are removed from the machine if not properly supported by the overhead crane.

NOTICE If further disassembly of the scissor arm pair is required, see *How to Disassemble a Scissor Arm Pair.*

32 Secure the non-steer end of the number 2 inner and outer arms (index #8 and #20) and the non-steer end of the number 1 inner and outer arms (index #10 and #12) together with a strap or other suitable device.

33 Attach a lifting strap from an overhead crane to the number 1 outer arm (index #12) at the non-steer end of the machine. Do not apply any lifting pressure.

34 Remove the pin retaining fasteners from the number 1 pivot pins (index #13) at the non-steer end of the machine.

35 Use a slide hammer to remove both number 1 pivot pins (index #13) from the non-steer end of the machine.

36 Carefully lift the number 1 outer arm at the non-steer end approximately 15 inches / 40 cm.

37 Place a 6 x 6 x 32 inch / 15 x 15 x 80 cm long block across both sides of the chassis under the barrel end of the lift cylinder.

38 Lower the number 1 outer arm (index #12) onto the block.

⚠WARNING Crushing hazard. Keep hands clear of moving parts when lowering the arms onto the block.

39 Attach a lifting strap from an overhead crane to the lifting eyes on the lift cylinder.

40 Remove the lift cylinder barrel-end pivot pin retaining fasteners.

41 Use a soft metal drift to remove the lift cylinder barrel-end pivot pin (index #11).

42 Carefully remove the lift cylinder from the machine.

⚠WARNING Crushing hazard. The lift cylinder could become unbalanced and fall when it is removed from the machine if not properly supported by the overhead crane.

43 Carefully lift the number 1 outer arm (index #12) approximately 2 inches / 5 cm and remove the block.

44 Lower the number 1 outer arm (index #12) onto the slide blocks.

⚠WARNING Crushing hazard. Keep hands clear of moving parts when lowering the arms onto the blocks.

45 Secure the number 1 outer arm (index #12) to the slide blocks.

46 Remove the strap installed in step 32.

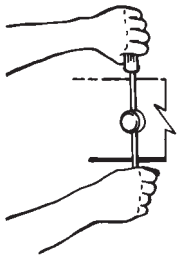
47 Support the cable tray with an overhead crane.

48 Remove the pin retaining fasteners from the cable tray pivot pin at the cross tube of the number 2 inner arm (index #8).

49 Place a rod through the cable tray pivot pin and twist to remove the pin. Lower the cable tray onto the number 1 inner arm (index #10).

⚠WARNING Crushing hazard. The cable tray may fall if not properly supported by the overhead crane.

CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.



SCISSOR COMPONENTS REV D

50 Secure both ends of the number 2 inner and outer arms (index #8 and #20) together with a strap or other suitable device.

51 Attach a lifting strap from an overhead crane to the number 2 inner and outer arms (index #8 and #20) at the steer end of the machine. Do not apply any lifting pressure.

52 Attach a lifting strap from an overhead crane to the number 2 inner and outer arms (index #8 and #20) at the non-steer end of the machine. Do not apply any lifting pressure.

53 Remove the pin retaining fasteners from both number 2 pivot pins (index #9) at the non-steer end of the machine. Do not remove the pins.

54 Remove the pin retaining fasteners from both number 2 pivot pins (index #21) at the steer end of the machine. Do not remove the pins.

55 Use a slide hammer to remove both number 2 pivot pins (index #9) from the non-steer end of the machine.

56 Use a slide hammer to remove both number 2 pivot pins (index #21) from the steer end of the machine.

57 Carefully remove the number 2 inner and outer arms (index #8 and #20) from the machine.

⚠WARNING Crushing hazard. The number 2 inner and outer arms could become unbalanced and fall when they are removed from the machine if not properly supported by the overhead crane.

NOTICE If further disassembly of the scissor arm pair is required, see *How to Disassemble a Scissor Arm Pair.*

58 Remove the cables from the number 1 inner arm (index #10).

59 Secure both ends of the number 1 inner and outer arms (index #10 and #12) together with a strap or other suitable device.

60 Attach a lifting strap from an overhead crane to the number 1 inner and outer arms (index #10 and #12) at the steer end of the machine. Do not apply any lifting pressure.

61 Attach a lifting strap from an overhead crane to the number 1 inner and outer arms (index #10 and #12) at the non-steer end of the machine. Do not apply any lifting pressure.

62 Remove the pin retaining fasteners from both chassis centering link pivot pins (index #23) at the number 1 inner arm.

63 Place a rod through each chassis centering link pivot pin and twist to remove the pin. Rest the centering links on the chassis.

64 Remove the pin retaining fasteners from the number 1 inner arm slide blocks (index #24) at the steer end of the machine.

65 Use a slide hammer to remove the number 1 inner arm slide block pivot pins (index #24).

66 Use a slide hammer to remove the number 1 outer arm slide block pivot pins (index #24) at the non-steer end of the machine.

67 Carefully remove the number 1 inner and outer arms (index #10 and #12) from the machine.

⚠WARNING Crushing hazard. The number 1 inner and outer arms could become unbalanced and fall when they are removed from the machine if not properly supported by the overhead crane.

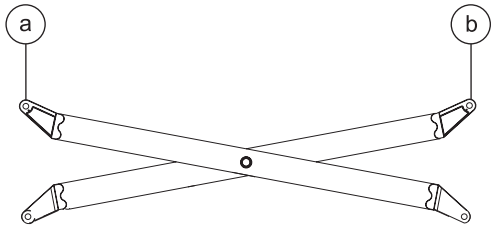
NOTICE If further disassembly of the scissor arm pair is required, see *How to Disassemble a Scissor Arm Pair.*

How to Disassemble a Scissor Arm Pair

⚠WARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is required.

1 Attach a lifting strap from an overhead crane to the end of the outer arm.

NOTICE Attach the lifting strap to the end of the scissor arm that has the casting pointing upwards.



a outer arm
b inner arm

2 Attach a lifting strap from a second overhead crane to the end of the inner arm.

NOTICE Attach the lifting strap to the end of the scissor arm that has the casting pointing upwards.

3 Raise the scissor arms with the overhead cranes approximately 12 inches / 30 cm.

4 Place a 12 inch / 30 cm block under the center of the scissor arm pair. Lower the scissor arm pair onto the block.

5 Remove the external snap rings from both center pivot pins.

6 Use a soft metal drift to remove both center pins.

7 Carefully separate the scissor arm pair.

⚠WARNING Crushing hazard. The scissor arms could become unbalanced and fall if not properly supported by the overhead cranes.

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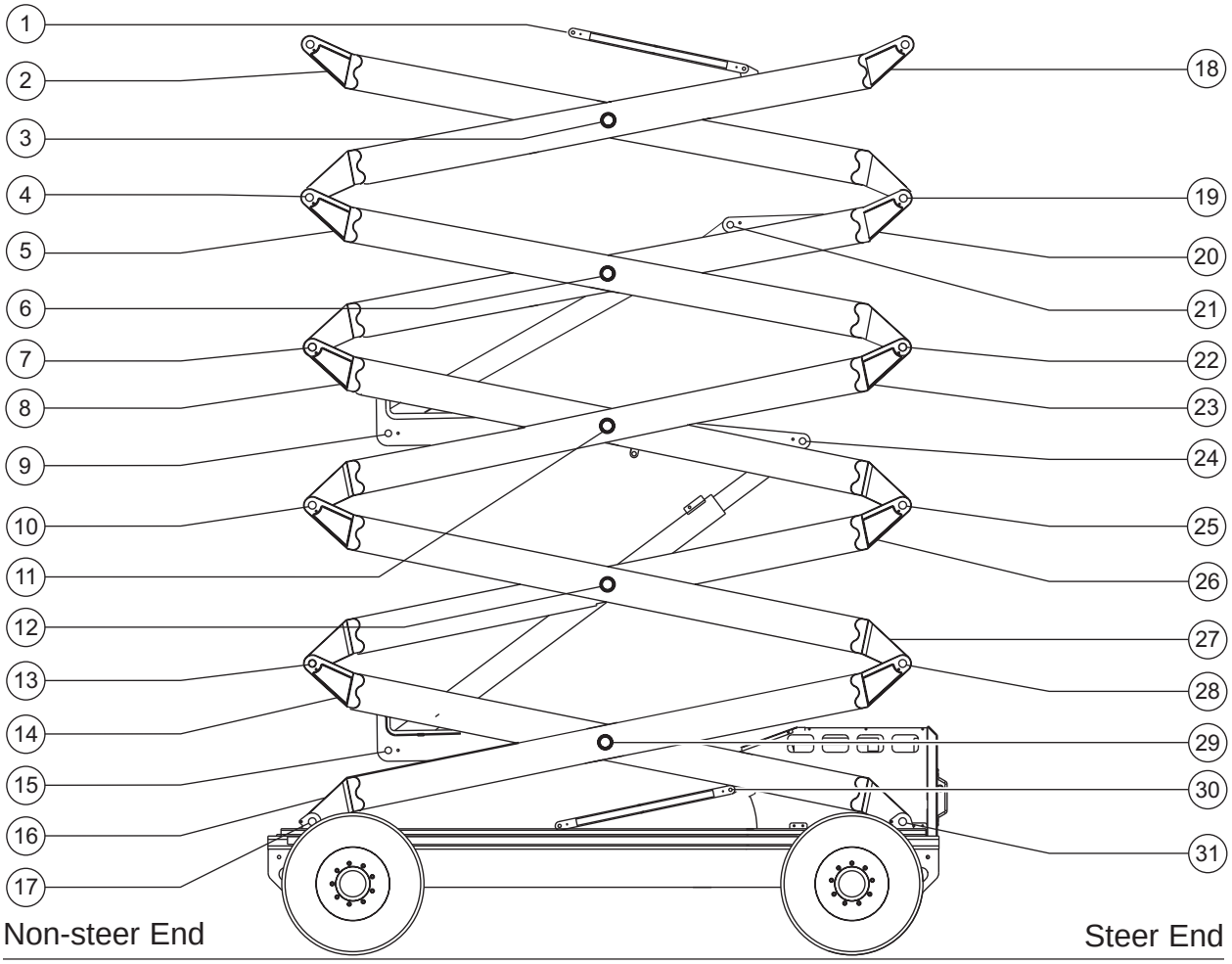

1 Platform centering link
2 Number 5 inner arm
3 Number 5 center pivot pins
4 Number 5 pivot pins (non-steer end)
5 Number 4 outer arm
6 Number 4 center pivot pins
7 Number 4 pivot pins (non-steer end)
8 Number 3 inner arm
9 Upper lift cylinder barrel-end pivot pin
10 Number 3 pivot pins (non-steer end)
11 Number 3 center pivot pins
12 Number 2 center pivot pins
13 Number 2 pivot pins (non-steer end)
14 Number 1 inner arm
15 Lower lift cylinder barrel-end pivot pin
16 Number 1 outer arm
17 Number 1 pivot pins (non-steer end)
18 Number 5 outer arm
19 Number 5 pivot pins (steer end)
20 Number 4 inner arm
21 Upper lift cylinder rod-end pivot pin
22 Number 4 pivot pins (steer end)
23 Number 3 outer arm
24 Lower lift cylinder rod-end pivot pin
25 Number 3 pivot pins (steer end)
26 Number 2 inner arm
27 Number 2 outer arm
28 Number 2 pivot pins (steer end)
29 Number 1 center pivot pins
30 Chassis centering link
31 Number 1 pivot pins (steer end)

3-3
Scissor Assembly, GS-5390

How to Disassemble the Scissor Assembly, GS-5390

⚠WARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is required.

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications*.

Before serial number 41073:

1 Remove the platform. See 2-1, *How to Remove the Platform.*

2 Remove the cables from the platform centering link (index #1) and upper cable bridge at the hydraulic tank side of the machine.

3 Remove the cables from the number 5 inner arm (index #2) and lay the cables off to the side.

CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.

4 Secure both ends of the number 5 inner and outer arms (index #2 and #18) together with a strap or other suitable device.

5 Attach a lifting strap from an overhead crane to the number 5 inner and outer arms (index #2 and #18) at the steer end of the machine. Do not apply any lifting pressure.

6 Attach a lifting strap from an overhead crane to the number 5 inner and outer arms (index #2 and #18) at the non-steer end of the machine. Do not apply any lifting pressure.

7 Remove the pin retaining fasteners from both number 5 pivot pins (index #4) at the non-steer end of the machine. Do not remove the pins.

8 Remove the pin retaining fasteners from both number 5 pivot pins (index #19) at the steer end of the machine. Do not remove the pins.

9 Use a slide hammer to remove both number 5 pivot pins (index #4) from the non-steer end of the machine.

10 Use a slide hammer to remove both number 5 pivot pins (index #19) from the steer end of the machine.

11 Carefully remove the number 5 inner and outer arms (index #2 and #18) from the machine.

⚠WARNING Crushing hazard. The number 5 inner and outer arms could become unbalanced and fall when they are removed from the machine if not properly supported by the overhead crane.

NOTICE If further disassembly of the scissor arm pair is required, see *How to Disassemble a Scissor Arm Pair.*

12 Remove the pin retaining fasteners from the upper lift cylinder rod-end pivot pin (index #21). Do not remove the pin.

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13 Attach a lifting strap from an overhead crane to the lifting eye at the rod end of the upper lift cylinder.

14 Use a soft metal drift to remove the upper lift cylinder rod-end pivot pin (index #21). Lower the rod end of the upper lift cylinder down.

⚠WARNING Crushing hazard. The upper lift cylinder could fall when the upper lift cylinder rod-end pivot pin is removed if not properly supported by the overhead crane.

15 Remove the cables from the number 4 inner arm (index #20) and lay the cables off to the side.

CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.

16 Secure both ends of the number 4 inner and outer arms (index #20 and #5) together with a strap or other suitable device.

17 Attach a lifting strap from an overhead crane to the number 4 inner and outer arms (index #20 and #5) at the steer end of the machine. Do not apply any lifting pressure.

18 Attach a lifting strap from an overhead crane to the number 4 inner and outer arms (index #20 and #5) at the non-steer end of the machine. Do not apply any lifting pressure.

19 Remove the pin retaining fasteners from both number 4 pivot pins (index #7) at the non-steer end of the machine. Do not remove the pins.

20 Remove the pin retaining fasteners from both number 4 pivot pins (index #22) at the steer end of the machine. Do not remove the pins.

21 Use a slide hammer to remove both number 4 pivot pins (index #7) from the non-steer end of the machine.

22 Use a slide hammer to remove both number 4 pivot pins (index #22) from the steer end of the machine.

23 Support the rod end of the upper lift cylinder with a suitable lifting device.

24 Carefully remove the number 4 inner and outer arms (index #20 and #5) from the machine while guiding the rod end of the upper lift cylinder out of the scissor arms.

⚠WARNING Crushing hazard. The number 4 inner and outer arms could become unbalanced and fall when they are removed from the machine if not properly supported by the overhead crane.

CAUTION Component damage hazard. The upper lift cylinder may fall if not properly supported when the number 4 inner and outer arms are removed.

NOTICE If further disassembly of the scissor arm pair is required, see *How to Disassemble a Scissor Arm Pair.*

25 Lower the rod end of the upper lift cylinder onto the cross tube of the number 3 inner arm (index #8).

26 Tag, disconnect and plug the hydraulic hoses from the upper lift cylinder. Cap the fittings on the cylinder.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

27 Remove the zip ties securing the hydraulic hoses to the upper lift cylinder.

28 Remove the pin retaining fasteners from the lower cylinder rod-end pivot pin (index #24).

29 Use a soft metal drift to remove the lower lift cylinder rod-end pivot pin.

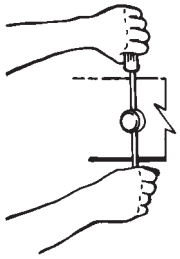
30 Carefully lower the rod end of the lower lift cylinder onto the engine cover.

31 Remove the cables and hydraulic hoses from the number 3 inner arm (index #8) and lay the cables and hoses off to the side.

CAUTION Component damage hazard. Cables and hoses can be damaged if they are kinked or pinched.

32 Remove the pin retaining fasteners from the cable tray pivot pin at the number 3 inner arm (index #8) on the hydraulic tank side of the machine.

33 Place a rod through the cable tray pivot pin and twist to remove the pin. Lower the cable tray down.



CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.

34 Remove the pin retaining fasteners from the hose tray pivot pin at the number 3 inner arm (index #11) on the ground controls side of the machine.

35 Place a rod through the hose tray pivot pin and twist to remove the pin. Lower the hose tray down.

CAUTION Component damage hazard. Hoses can be damaged if they are kinked or pinched.

36 Secure both ends of the number 3 inner and outer arms (index #8 and #23) together with a strap or other suitable device.

37 Attach a lifting strap from an overhead crane to the number 3 inner and outer arms (index #8 and #23) at the steer end of the machine. Do not apply any lifting pressure.

38 Attach a lifting strap from an overhead crane to the number 3 inner and outer arms (index #8 and #23) at the non-steer end of the machine. Do not apply any lifting pressure.

39 Remove the pin retaining fasteners from both number 3 pivot pins (index #10) at the non-steer end of the machine. Do not remove the pins.

40 Remove the pin retaining fasteners from both number 3 pivot pins (index #25) at the steer end of the machine. Do not remove the pins.

41 Use a slide hammer to remove both number 3 pivot pins (index #10) from the non-steer end of the machine.

42 Use a slide hammer to remove both number 3 pivot pins (index #25) from the steer end of the machine.

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43 Carefully remove the number 3 inner and outer arms (index #8 and #23) and upper lift cylinder from the machine.

⚠WARNING Crushing hazard. The number 3 inner and outer arms could become unbalanced and fall when they are removed from the machine if not properly supported by the overhead crane.

NOTICE If further disassembly of the scissor arm pair is required, see *How to Disassemble a Scissor Arm Pair.*

44 Block the steer end wheels and center a lifting jack of ample capacity under the non-steer end of the drive chassis.

45 Loosen the wheel lug nuts on one of the non-steer wheels. Do not remove them.

46 Raise the machine approximately 2 inches / 5 cm. Place blocks under the chassis for support.

⚠WARNING Crushing hazard. The chassis will fall if not properly supported.

47 Remove the wheel lug nuts. Remove the tire and wheel assembly.

48 Tag, disconnect and plug the hydraulic hoses from the lower lift cylinder. Cap the fittings on the cylinder.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

49 Cut the zip ties securing the hydraulic hoses to the lower lift cylinder. Lay the hoses out of the way.

CAUTION Component damage hazard. Hoses can be damaged if they are kinked or pinched.

50 Attach a lifting strap from an overhead crane to the lifting eyes at the rod end of the lower lift cylinder for support. Do not lift it.

51 Raise the lower lift cylinder to a vertical position using the overhead crane.

52 Remove the pin retaining fasteners from the lower lift cylinder barrel-end pivot pin (index #15).

53 Use a soft metal drift to remove the lower lift cylinder barrel-end pivot pin (index #15).

54 Carefully remove the lower lift cylinder from the machine.

⚠WARNING Crushing hazard. The lower lift cylinder could become unbalanced and fall when it is removed from the machine if not properly supported by the overhead crane.

55 Remove the cables and hydraulic hoses from the number 2 inner arm (index #26).

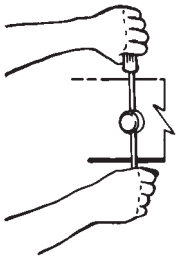
56 Support the cable tray at the hydraulic tank side of the machine with an overhead crane.

57 Remove the pin retaining fasteners from the cable tray pivot pin at the cross tube of the number 2 inner arm (index #26) on the hydraulic tank side of the machine.

58 Place a rod through the cable tray pivot pin and twist to remove the pin. Lower the cable tray onto the number 1 inner arm (index #14).

⚠CAUTION Crushing hazard. The cable tray may fall if not properly supported by the overhead crane.

CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.



59 Support the hose tray at the ground controls side of the machine with an overhead crane.

60 Remove the pin retaining fasteners from the hose tray pivot pin at the cross tube of the number 2 inner arm (index #26) on the ground controls side of the machine.

61 Place a rod through the hose tray pivot pin and twist to remove the pin. Lower the hose tray onto the number 1 inner arm (index #14).

⚠CAUTION Crushing hazard. The hose tray may fall if not properly supported by the overhead crane.

CAUTION Component damage hazard. Hoses can be damaged if they are kinked or pinched.

62 Remove the hydraulic hoses and cables from the number 2 inner arm (index #26).

63 Secure both ends of the number 2 inner and outer arms (index #26 and #27) together with a strap or other suitable device.

64 Attach a lifting strap from an overhead crane to the number 2 inner and outer arms (index #26 and #27) at the steer end of the machine. Do not apply any lifting pressure.

65 Attach a lifting strap from an overhead crane to the number 2 inner and outer arms (index #26 and #27) at the non-steer end of the machine. Do not apply any lifting pressure.

66 Remove the pin retaining fasteners from both number 2 pivot pins (index #13) at the non-steer end of the machine. Do not remove the pins.

67 Remove the pin retaining fasteners from both number 2 pivot pins (index #28) at the steer end of the machine. Do not remove the pins.

68 Use a slide hammer to remove both number 2 pivot pins (index #13) from the non-steer end of the machine.

69 Use a slide hammer to remove both number 2 pivot pins (index #28) from the steer end of the machine.

70 Carefully remove the number 2 inner and outer arms (index #26 and #27) from the machine.

⚠WARNING Crushing hazard. The number 2 inner and outer arms could become unbalanced and fall when they are removed from the machine if not properly supported by the overhead crane.

NOTICE If further disassembly of the scissor arm pair is required, see *How to Disassemble a Scissor Arm Pair.*

71 Remove the cables and hydraulic hoses from the number 1 inner arm (index #14) and lay them off to the side.

CAUTION Component damage hazard. Cables and hoses can be damaged if they are kinked or pinched.

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72 Secure both ends of the number 1 inner and outer arms (index #14 and #16) together with a strap or other suitable device.

73 Attach a lifting strap from an overhead crane to the number 1 inner and outer arms (index #14 and #16) at the steer end of the machine. Do not apply any lifting pressure.

74 Attach a lifting strap from an overhead crane to the number 1 inner and outer arms (index #14 and #16) at the non-steer end of the machine. Do not apply any lifting pressure.

75 Remove the pin retaining fasteners from both chassis centering link pivot pins (index #30) at the number 1 inner arm.

76 Place a rod through each chassis centering link pivot pin and twist to remove the pin. Rest the centering links on the chassis.

77 Remove the pin retaining fasteners from the number 1 inner arm slide block pivot pins (index #31) at the steer end of the machine.

78 Use a slide hammer to remove the number 1 inner arm slide block pivot pins (index #31).

79 Remove the pin retaining fasteners from the number 1 outer arm slide block pivot pins (index #17) at the non-steer end of the machine.

80 Use a slide hammer to remove the number 1 outer arm slide block pivot pins (index #17).

81 Carefully remove the number 1 inner and outer arms (index #14 and #16) from the machine.

⚠WARNING Crushing hazard. The number 1 inner and outer arms could become unbalanced and fall when they are removed from the machine if not properly supported by the overhead crane.

NOTICE If further disassembly of the scissor arm pair is required, see *How to Disassemble a Scissor Arm Pair.*

After serial number 41072:

1 Remove the platform. See 2-1, *How to Remove the Platform.*

2 Remove the cables from the platform centering link (index #1) and upper cable bridge at the hydraulic tank side of the machine.

3 Remove the cables from the number 5 inner arm (index #2) and lay the cables off to the side.

CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.

4 Secure both ends of the number 5 inner and outer arms (index #2 and #18) together with a strap or other suitable device.

5 Attach a lifting strap from an overhead crane to the number 5 inner and outer arms (index #2 and #18) at the steer end of the machine. Do not apply any lifting pressure.

6 Attach a lifting strap from an overhead crane to the number 5 inner and outer arms (index #2 and #18) at the non-steer end of the machine. Do not apply any lifting pressure.

7 Remove the pin retaining fasteners from both number 5 pivot pins (index #4) at the non-steer end of the machine. Do not remove the pins.

8 Remove the pin retaining fasteners from both number 5 pivot pins (index #19) at the steer end of the machine. Do not remove the pins.

9 Use a slide hammer to remove both number 5 pivot pins (index #4) from the non-steer end of the machine.

10 Use a slide hammer to remove both number 5 pivot pins (index #19) from the steer end of the machine.

11 Carefully remove the number 5 inner and outer arms (index #2 and #18) from the machine.

⚠WARNING Crushing hazard. The number 5 inner and outer arms could become unbalanced and fall when they are removed from the machine if not properly supported by the overhead crane.

NOTICE If further disassembly of the scissor arm pair is required, see *How to Disassemble a Scissor Arm Pair.*

12 Remove the pin retaining fasteners from the upper lift cylinder rod-end pivot pin (index #21). Do not remove the pin.

13 Attach a lifting strap from an overhead crane to the lifting eye at the rod end of the upper lift cylinder.

14 Use a soft metal drift to remove the upper lift cylinder rod-end pivot pin (index #21). Lower the rod end of the upper lift cylinder down.

⚠WARNING Crushing hazard. The upper lift cylinder could fall when the upper lift cylinder rod-end pivot pin is removed if not properly supported by the overhead crane.

15 Remove the cables from the number 4 inner arm (index #20) and lay the cables off to the side.

CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.

16 Secure both ends of the number 4 inner and outer arms (index #20 and #5) together with a strap or other suitable device.

17 Attach a lifting strap from an overhead crane to the number 4 inner and outer arms (index #20 and #5) at the steer end of the machine. Do not apply any lifting pressure.

18 Attach a lifting strap from an overhead crane to the number 4 inner and outer arms (index #20 and #5) at the non-steer end of the machine. Do not apply any lifting pressure.

19 Remove the pin retaining fasteners from both number 4 pivot pins (index #7) at the non-steer end of the machine. Do not remove the pins.

20 Remove the pin retaining fasteners from both number 4 pivot pins (index #22) at the steer end of the machine. Do not remove the pins.

21 Use a slide hammer to remove both number 4 pivot pins (index #7) from the non-steer end of the machine.

22 Use a slide hammer to remove both number 4 pivot pins (index #22) from the steer end of the machine.

23 Support the rod end of the upper lift cylinder with a suitable lifting device.

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24 Carefully remove the number 4 inner and outer arms (index #20 and #5) from the machine while guiding the rod end of the upper lift cylinder out of the scissor arms.

⚠WARNING Crushing hazard. The number 4 inner and outer arms could become unbalanced and fall when they are removed from the machine if not properly supported by the overhead crane.

CAUTION Component damage hazard. The upper lift cylinder may fall if not properly supported when the number 4 inner and outer arms are removed.

NOTICE If further disassembly of the scissor arm pair is required, see *How to Disassemble a Scissor Arm Pair.*

25 Lower the rod end of the upper lift cylinder onto the cross tube of the number 3 inner arm (index #8).

26 Tag, disconnect and plug the hydraulic hoses from the upper lift cylinder. Cap the fittings on the cylinder.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

27 Remove the zip ties securing the hydraulic hoses to the upper lift cylinder.

28 Remove the pin retaining fasteners from the lower cylinder rod-end pivot pin (index #24).

29 Use a soft metal drift to remove the lower lift cylinder rod-end pivot pin.

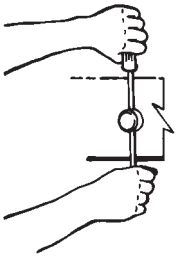
30 Carefully lower the rod end of the lower lift cylinder onto the engine cover.

31 Remove the cables and hydraulic hoses from the number 3 inner arm (index #8) and lay the cables and hoses off to the side.

CAUTION Component damage hazard. Cables and hoses can be damaged if they are kinked or pinched.

32 Remove the pin retaining fasteners from the cable tray pivot pin at the number 3 inner arm (index #8) on the hydraulic tank side of the machine.

33 Place a rod through the cable tray pivot pin and twist to remove the pin. Lower the cable tray down.



CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.

34 Remove the pin retaining fasteners from the hose tray pivot pin at the number 3 inner arm (index #11) on the ground controls side of the machine.

35 Place a rod through the hose tray pivot pin and twist to remove the pin. Lower the hose tray down.

CAUTION Component damage hazard. Hoses can be damaged if they are kinked or pinched.

36 Secure both ends of the number 3 inner and outer arms (index #8 and #23) together with a strap or other suitable device.

37 Attach a lifting strap from an overhead crane to the number 3 inner and outer arms (index #8 and #23) at the steer end of the machine. Do not apply any lifting pressure.

38 Attach a lifting strap from an overhead crane to the number 3 inner and outer arms (index #8 and #23) at the non-steer end of the machine. Do not apply any lifting pressure.

39 Remove the pin retaining fasteners from both number 3 pivot pins (index #10) at the non-steer end of the machine. Do not remove the pins.

40 Remove the pin retaining fasteners from both number 3 pivot pins (index #25) at the steer end of the machine. Do not remove the pins.

41 Use a slide hammer to remove both number 3 pivot pins (index #10) from the non-steer end of the machine.

42 Use a slide hammer to remove both number 3 pivot pins (index #25) from the steer end of the machine.

43 Carefully remove the number 3 inner and outer arms (index #8 and #23) and upper lift cylinder from the machine.

⚠WARNING Crushing hazard. The number 3 inner and outer arms could become unbalanced and fall when they are removed from the machine if not properly supported by the overhead crane.

NOTICE If further disassembly of the scissor arm pair is required, see *How to Disassemble a Scissor Arm Pair.*

44 Secure the non-steer end of the number 2 inner and outer arms (index #26 and #27) and the non-steer end of the number 1 inner and outer arms (index #14 and #16) together with a strap or other suitable device.

45 Attach a lifting strap from an overhead crane to the number 1 outer arm (index #16) at the non-steer end of the machine. Do not apply any lifting pressure.

46 Remove the pin retaining fasteners from the number 1 pivot pins (index #17) at the non-steer end of the machine.

47 Use a slide hammer to remove both number 1 pivot pins (index #17) from the non-steer end of the machine.

48 Carefully lift the number 1 outer arm at the non-steer end approximately 15 inches / 40 cm.

49 Place a 6 x 6 x 32 inch / 15 x 15 x 80 cm long block across both sides of the chassis under the barrel end of the lift cylinder.

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50 Lower the number 1 outer arm (index #16) onto the block.

⚠WARNING Crushing hazard. Keep hands clear of moving parts when lowering the arms onto the block.

51 Attach a lifting strap from an overhead crane to the lifting eyes on the lift cylinder.

52 Remove the lift cylinder barrel-end pivot pin retaining fasteners.

53 Use a soft metal drift to remove the lift cylinder barrel-end pivot pin (index #15).

54 Carefully remove the lift cylinder from the machine.

⚠WARNING Crushing hazard. The lift cylinder could become unbalanced and fall when it is removed from the machine if not properly supported by the overhead crane.

55 Carefully lift the number 1 outer arm (index #16) approximately 2 inches / 5 cm and remove the block.

56 Lower the number 1 outer arm (index #16) onto the slide blocks.

⚠WARNING Crushing hazard. Keep hands clear of moving parts when lowering the arms onto the blocks.

57 Secure the number 1 outer arm (index #16) to the slide blocks.

58 Remove the strap installed in step 44.

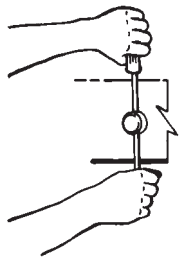
59 Support the cable tray with an overhead crane.

60 Remove the pin retaining fasteners from the cable tray pivot pin at the cross tube of the number 2 inner arm (index #26).

61 Place a rod through the cable tray pivot pin and twist to remove the pin. Lower the cable tray onto the number 1 inner arm (index #14).

⚠WARNING Crushing hazard. The cable tray may fall if not properly supported by the overhead crane.

CAUTION Component damage hazard. Cables can be damaged if they are kinked or pinched.



62 Secure both ends of the number 2 inner and outer arms (index #26 and #27) together with a strap or other suitable device.

63 Attach a lifting strap from an overhead crane to the number 2 inner and outer arms (index #26 and #27) at the steer end of the machine. Do not apply any lifting pressure.

64 Attach a lifting strap from an overhead crane to the number 2 inner and outer arms (index #26 and #27) at the non-steer end of the machine. Do not apply any lifting pressure.

65 Remove the pin retaining fasteners from both number 2 pivot pins (index #13) at the non-steer end of the machine. Do not remove the pins.

66 Remove the pin retaining fasteners from both number 2 pivot pins (index #28) at the steer end of the machine. Do not remove the pins.

67 Use a slide hammer to remove both number 2 pivot pins (index #13) from the non-steer end of the machine.

68 Use a slide hammer to remove both number 2 pivot pins (index #28) from the steer end of the machine.

69 Carefully remove the number 2 inner and outer arms (index #26 and #27) from the machine.

⚠WARNING Crushing hazard. The number 2 inner and outer arms could become unbalanced and fall when they are removed from the machine if not properly supported by the overhead crane.

NOTICE If further disassembly of the scissor arm pair is required, see *How to Disassemble a Scissor Arm Pair.*

70 Remove the cables from the number 1 inner arm (index #14).

71 Secure both ends of the number 1 inner and outer arms (index #14 and #16) together with a strap or other suitable device.

72 Attach a lifting strap from an overhead crane to the number 1 inner and outer arms (index #14 and #16) at the steer end of the machine. Do not apply any lifting pressure.

73 Attach a lifting strap from an overhead crane to the number 1 inner and outer arms (index #14 and #16) at the non-steer end of the machine. Do not apply any lifting pressure.

74 Remove the pin retaining fasteners from both chassis centering link pivot pins (index #30) at the number 1 inner arm.

75 Place a rod through each chassis centering link pivot pin and twist to remove the pin. Rest the centering links on the chassis.

76 Remove the pin retaining fasteners from the number 1 inner arm slide blocks (index #31) at the steer end of the machine.

77 Use a slide hammer to remove the number 1 inner arm slide block pivot pins (index #31).

78 Use a slide hammer to remove the number 1 outer arm slide block pivot pins (index #31) at the non-steer end of the machine.

79 Carefully remove the number 1 inner and outer arms (index #14 and #16) from the machine.

⚠WARNING Crushing hazard. The number 1 inner and outer arms could become unbalanced and fall when they are removed from the machine if not properly supported by the overhead crane.

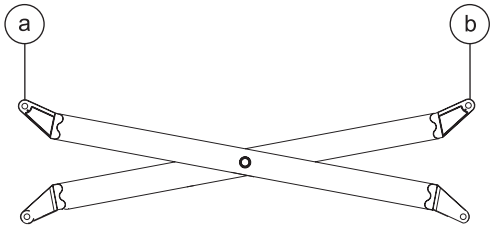
NOTICE If further disassembly of the scissor arm pair is required, see *How to Disassemble a Scissor Arm Pair.*

How to Disassemble a Scissor Arm Pair

⚠WARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is required.

1 Attach a lifting strap from an overhead crane to the end of the outer arm.

NOTICE Attach the lifting strap to the end of the scissor arm that has the casting pointing upwards.



a outer arm
b inner arm

2 Attach a lifting strap from a second overhead crane to the end of the inner arm.

NOTICE Attach the lifting strap to the end of the scissor arm that has the casting pointing upwards.

3 Raise the scissor arms with the overhead cranes approximately 12 inches / 30 cm.

4 Place a 12 inch / 30 cm block under the center of the scissor arm pair. Lower the scissor arm pair onto the block.

5 Remove the external snap rings from both center pivot pins.

6 Use a soft metal drift to remove both center pins.

7 Carefully separate the scissor arm pair.

⚠WARNING Crushing hazard. The scissor arms could become unbalanced and fall if not properly supported by the overhead cranes.

3-4
Wear Pads

How to Replace the Scissor Arm Wear Pads

Platform Scissor Arm Wear Pads:

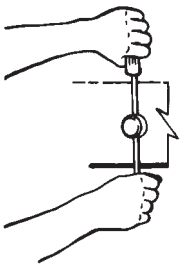
1 Place a lifting strap from an overhead crane under the platform at the steer end of the machine for support. Do not attach the lifting straps from the overhead crane to the platform railings.

2 Place a lifting strap from a second overhead crane under the platform at the non-steer end of the machine for support. Do not attach the lifting straps from the overhead crane to the platform railings.

3 Lift the platform slightly using the overhead cranes just enough to take the pressure off the platform slide block pivot pins.

4 Remove the pin retaining fasteners from each platform centering link pivot pin at the platform.

5 Place a rod through each platform centering link pivot pin and twist to remove the pin. Rest the centering links on the scissor arms.



6 Remove the pin retaining fasteners from each platform slide block pivot pin. Do not remove the pins.

7 Use a slide hammer to remove each platform slide block pivot pin.

⚠WARNING Crushing hazard. The platform will fall when the platform slider block pivot pins are removed if not properly supported by the overhead cranes.

8 Move each slide block towards the center of the platform and carefully remove each platform slide block from the platform.

9 Remove the retaining fasteners from the wear pads on the slide blocks. Remove the wear pads.

10 Install the new wear pads onto the scissor arm slide blocks.

11 Install the slide blocks onto the platform.

12 Align the holes in the slide blocks with the holes in the scissor arms.

13 Install the slide block pivot pins and the pin retaining fasteners.

14 Attach the platform centering links to the platform and install the platform centering link pivot pins and the pin retaining fasteners.

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Chassis Scissor Arm Wear Pads:

NOTICE If removing the steer end slide blocks, the engine top and side covers need to be removed first. Proceed to step 1.

NOTICE If removing the non-steer end slide blocks, proceed to step 11.

1 Start the engine from the ground controls and raise the platform approximately 18 feet / 5.5 m from the ground.

2 **Before serial number 40351:** Release the safety arm latch, lift the safety arm and rotate down to a vertical position.

After serial number 40350: Release the safety arm latch, lift the safety arm and rotate to a vertical position. Lock the safety arm in position.

NOTICE Be sure that the safety arm is locked in the vertical position.

3 Lower the platform onto the safety arm. Turn the machine off.

⚠WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

4 Release the latches on the engine tray and fully slide the engine tray out.

5 Insert a 6 inch / 15 cm screwdriver or rod into the engine tray lock hole located near the engine tray roller wheels to prevent the engine tray from moving.

6 Remove the retaining fasteners from the top engine cover plate. Remove the plate from the machine.

7 Loosen the retaining fasteners from each side engine cover plate. Remove the engine side cover plates from the machine.

8 Start the engine from the ground controls.

9 Raise the platform slightly and return the safety arm to the stowed position.

10 Lower the platform to the stowed position.

11 Secure the ends of the scissor arms together at both ends of the machine with a tie down strap or other appropriate device.

12 Attach a lifting strap from an overhead crane to the end of the scissor arms that need the slide blocks removed.

13 Raise the scissor arms using the overhead crane just enough to take the pressure off the slide block pivot pins.

14 Remove the pin retaining fasteners from the chassis slide block pivot pin.

15 Use a slide hammer to remove the chassis slide block pivot pin. Remove the slide block from the machine by sliding it out the end of the slider channel.

⚠WARNING Crushing hazard. The platform will fall when the platform slide block pivot pins are removed if it is not properly supported by the overhead cranes.

16 Remove the retaining fasteners from the wear pads on the slide blocks. Remove the wear pads.

17 Install the new wear pads onto the scissor arm slide blocks.

18 Install the slide blocks onto the chassis.

19 Align the holes in the slide blocks with the holes in the scissor arms.

20 Install the slide block pivot pins and the pin retaining fasteners.

21 Repeat steps 12 through 20 for the remaining scissor arm wear pads.

22 Install the top engine cover plate.

23 Tighten the engine side cover plate fasteners.

24 Close and latch the engine slide out tray.

25 Lower the platform to the stowed position.

3-5
Lift Cylinder(s)

The lift cylinders are double acting hydraulic cylinders. The GS-3390 and GS-4390 use one lift cylinder; the GS-5390 uses two. Each lift cylinder is equipped with a counterbalance valve to prevent movement in the event of a hydraulic line failure.

How to Remove the Lift Cylinder

GS-3390 and GS-4390:

⚠WARNING Bodily injury hazard. The counterbalance valve in the lift cylinder is factory set. Do not attempt to adjust the counterbalance valve. Attempting to adjust the counterbalance valve could result in death or serious injury and significant component damage. Dealer service is strongly recommended.

⚠WARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications*.

1 Start the engine from the ground controls and raise the platform approximately 18 feet / 5.5 m from the ground.

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2 **Before serial number 40351:** Release the safety arm latch, lift the safety arm and rotate down to a vertical position.

After serial number 40350: Release the safety arm latch, lift the safety arm and rotate to a vertical position. Lock the safety arm in position.

NOTICE Be sure that the safety arm is locked in the vertical position.

3 Lower the platform onto the safety arm. Turn the machine off.

⚠WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

4 Tag, disconnect and plug the hydraulic hoses from the lift cylinder. Cap the fittings on the cylinder.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

5 Cut the zip ties attaching the hydraulic hoses to the lift cylinder. Lay the hoses out of the way.

CAUTION Component damage hazard. Hoses can be damaged if they are kinked or pinched.

6 Attach a lifting strap from an overhead crane or similar lifting device to the lifting eye at the rod end of the lift cylinder for support.

7 Attach a lifting strap from a second overhead crane or similar lifting device to the lifting eye at the barrel end of the lift cylinder for support.

8 Remove the lift cylinder rod-end pivot pin retaining fastener. Use a soft metal drift to remove the pin.

⚠WARNING Crushing hazard. The lift cylinder will fall if it is not properly supported.

9 Carefully lower the cylinder onto the cross tube of the number 2 inner arm. Protect the cylinder rod from damage.

CAUTION Component damage hazard. The counterbalance valve on the lift cylinder can be damaged if it is allowed to come in contact with the scissor arm cross tube.

10 Remove the lift cylinder barrel-end pivot pin retaining fastener. Use a soft metal drift to remove the pin.

⚠WARNING Crushing hazard. The lift cylinder will fall if it is not properly supported.

11 Carefully pull the lift cylinder out the non-steer end of the machine through the scissor arms and safety arm. Remove the lift cylinder from the machine.

⚠WARNING Crushing hazard. The lift cylinder may become unbalanced and fall when it is removed from the machine if not properly supported.

GS-5390:

⚠DANGER Bodily injury hazard. The counterbalance valves in the lift cylinders are factory set. Do not attempt to adjust the counterbalance valves. Attempting to adjust the counterbalance valves will result in death or serious injury and significant component damage. Dealer service is strongly recommended.

⚠WARNING Bodily injury hazard. This procedure requires specific repair skills, lifting equipment and a suitable workshop. Attempting this procedure without these skills and tools could result in death or serious injury and significant component damage. Dealer service is strongly recommended.

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications*.

1 Start the engine from the ground controls and raise the platform approximately 18 feet / 5.5 m from the ground.

2 **Before serial number 40263:** Release the safety arm latch, lift the safety arm and rotate down to a vertical position.

After serial number 40262: Release the safety arm latch, lift the safety arm and rotate to a vertical position. Lock the safety arm in position.

NOTICE Be sure that the safety arm is locked in the vertical position.

3 Lower the platform onto the safety arm. Turn the machine off.

⚠WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

4 Tag, disconnect and plug the hydraulic hoses from the lift cylinder. Cap the fittings on the cylinder.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

5 **Lower lift cylinder:** Cut the zip ties attaching the hydraulic hoses to the lift cylinder. Lay the hoses out of the way.

CAUTION Component damage hazard. Hoses can be damaged if they are kinked or pinched.

6 Attach a lifting strap from an overhead crane or similar lifting device to the lifting eye at the rod end of the lift cylinder for support.

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7 Attach a lifting strap from a second overhead crane or similar lifting device to the lifting eye at the barrel end of the lift cylinder for support.

8 Remove the lift cylinder rod-end pivot pin retaining fastener. Use a soft metal drift to remove the pin.

⚠WARNING Crushing hazard. The lift cylinder will fall if it is not properly supported.

9 Carefully lower the cylinder to a horizontal position. Protect the cylinder rod from damage.

CAUTION Component damage hazard. The counterbalance valve on the lift cylinder can be damaged if it is allowed to come in contact with the scissor arm cross tube.

10 Remove the lift cylinder barrel-end pivot pin retaining fastener. Use a soft metal drift to remove the pin.

⚠WARNING Crushing hazard. The lift cylinder will fall if it is not properly supported.

11 Carefully pull the lift cylinder out the non-steer end of the machine through the scissor arms. Remove the lift cylinder from the machine.

⚠WARNING Crushing hazard. The lift cylinder may become unbalanced and fall when it is removed from the machine if not properly supported.

Engines

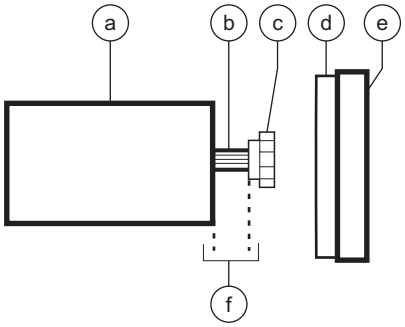
REV C

4-1
RPM Adjustment

Refer to Maintenance Procedure B-6, *Check and Adjust the Engine RPM.*

4-2
Flex Plate

The flex plate couples the engine to the pump. The flex plate is bolted to the engine flywheel and has a cut-out in the center for the pump coupler.



a pump
b pump shaft
c coupler
d flex plate
e flywheel
f 1/4 inch gap (Ford models)
3/8 inch gap (Deutz models)

How to Remove the Flex Plate

Ford models:

1 Release the latches on the engine tray and fully slide the engine tray out.

2 Insert a 6 inch / 15 cm screwdriver or rod into the engine tray lock hole located near the engine tray roller wheels to prevent the engine tray from moving.

3 Remove the hose clamp from the air cleaner hose that connects to the throttle body.

4 Disconnect the valve cover vent hose from the air cleaner.

5 Remove the air filter mounting fasteners. Remove the air filter from the engine and lay it off to the side.

6 Close the shutoff valve on the Liquid Petroleum Gas (LPG) tank by turning it clockwise (if equipped).

7 Remove the LPG supply hose from the LPG solenoid.

⚠DANGER Explosion and fire hazard. Engine fuels are combustible. Replace the fuel hoses in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

⚠DANGER Explosion and fire hazard. Liquid Petroleum Gas (LPG) is kept at a very high pressure. Fuel may be expelled under pressure if the hose is removed too quickly. Loosen the LPG supply hose very slowly to allow the fuel pressure to dissipate gradually. Wrap a cloth around LPG supply hose to absorb leaking fuel before disconnecting them.

⚠CAUTION Bodily injury hazard. Beware of Liquid Petroleum Gas (LPG). Contact with LPG may cause severe burns.

8 Remove the ground wire for the LPG solenoid from the ECM mounting fastener.

9 Remove the engine ECM mounting bracket fasteners. Remove the engine ECM from the engine slide out tray and carefully lay it off to the side.

CAUTION Component damage hazard. The engine ECM is a sensitive instrument. It can be damaged internally if the ECM is dropped or sustains any physical shock, even if the damage is not visible.

10 Remove the exhaust pipe clamp from the exhaust pipe support bracket.

11 Center a lifting jack under the engine oil pan.

12 Place a wood block between the lifting jack and the engine oil pan.

CAUTION Component damage hazard. The engine oil pan can become damaged if the engine is raised with the lifting jack without the wood block between the lifting jack and the engine oil pan.

13 Remove the 2 engine mounting fasteners from the bell housing that attach the engine to the slide out tray.

14 Raise the engine slightly with the lifting jack to take the pressure off the rubber vibration isolators under the bell housing. Remove the rubber vibration isolators.

15 Attach a lifting strap from an overhead crane to the pump and bell housing assembly for support. Do not apply any lifting pressure.

16 Remove all of the bell housing to engine fasteners.

17 Carefully pull the pump and bell housing away from the engine and secure it from moving.

CAUTION Component damage hazard. Hoses can be damaged if they are kinked or pinched.

18 Remove the flex plate mounting fasteners. Remove the flex plate from the flywheel.

Deutz models:

1 Release the latches on the engine tray and fully slide the engine tray out.

2 Insert a 6 inch / 15 cm screwdriver or rod into the engine tray lock hole located near the engine tray roller wheels to prevent the engine tray from moving.

3 Remove the hose clamp from the air cleaner hose that connects to the engine.

4 Remove the air filter mounting fasteners. Remove the air filter from the engine and lay it off to the side.

5 Remove the exhaust pipe clamp from the exhaust pipe support bracket.

6 Attach a lifting strap from an overhead crane to the pump assembly for support. Do not lift it.

7 Remove all of the pump mounting plate to engine fasteners.

8 Carefully pull the pump assembly away from the engine and secure it from moving.

CAUTION Component damage hazard. Hoses can be damaged if they are kinked or pinched.

9 Remove the flex plate mounting fasteners. Remove the flex plate from the flywheel.

How to Install the Flex Plate

1 Install the flex plate onto the flywheel with the raised spline towards the pump.

2 Apply Loctite® removable thread sealant to the flex plate mounting fasteners. Torque the flex plate mounting fasteners to 34 ft-lbs / 46 Nm.

4-3 Oil Temperature and Oil Pressure Switches - Deutz Models

The engine oil temperature switch is a normally open switch. The switch contacts close at approximately 300° F / 149° C. If the oil temperature rises above the switch point, the switch contacts close and the engine will shut off to prevent damage. The engine will not start until the temperature drops below the switch point. An over-temperature indicator light at the ground controls should turn on when the switch closes.

The engine oil pressure switch is a normally closed switch. The switch contacts open at approximately 7 psi / 0.48 bar. If the oil pressure drops below the switch point, the switch opens and the engine will shut off to prevent damage. A low oil pressure indicator light at the ground controls should turn on when the switch opens.

How to Remove the Oil Temperature and Oil Pressure Switches

NOTICE Perform this procedure with the engine off.

1 Release the latches on the engine tray and fully slide the engine tray out.

2 Insert a 6 inch / 15 cm screwdriver or rod into the engine tray lock hole located near the engine tray roller wheels to prevent the engine tray from moving.

3 **Oil temperature switch:** Remove the fasteners from the engine side cover and remove the cover.

Oil pressure switch: Locate the oil pressure switch near the oil filter.

4 Tag and disconnect the wiring from the switch. Remove the switch from the engine.

⚠CAUTION Burn hazard. Contact with hot engine fluids or components may cause severe burns.

5 Install and tighten the new switch. Torque to specification.

NOTICE Always use pipe thread sealant when installing a switch.

6 Connect the wires to the new switch.

7 **Oil temperature switch:** Install the engine side cover.

Oil temperature switch specifications	
Torque	8-10 ft-lbs 11-14 Nm
Hex size	$1^{1}/_{16}$ inches
Temperature switch point	300°F 149°C

Oil pressure switch specifications	
Torque	8-10 ft-lbs 11-14 Nm
Hex size	$1^{1}/_{16}$ inches
Oil pressure switch point	7 psi 0.48 bar

4-4 Coolant Temperature and Oil Pressure Switches - Ford Models

The engine coolant temperature switch is a normally open switch. The switch contacts close at approximately 230°F / 110°C. If the coolant temperature rises above the switch point, the switch contacts close and the engine will shut off to prevent damage. The engine will not start until the temperature drops below the switch point. An over-temperature indicator light at the ground controls should turn on when the switch closes.

The engine oil pressure switch is a normally closed switch. The switch contacts open at approximately 8 psi / 0.55 bar. If the oil pressure drops below the switch point, the switch opens and the engine will shut off to prevent damage. A low oil pressure indicator light at the ground controls should turn on when the switch opens.

How to Remove the Coolant Temperature and Oil Pressure Switches

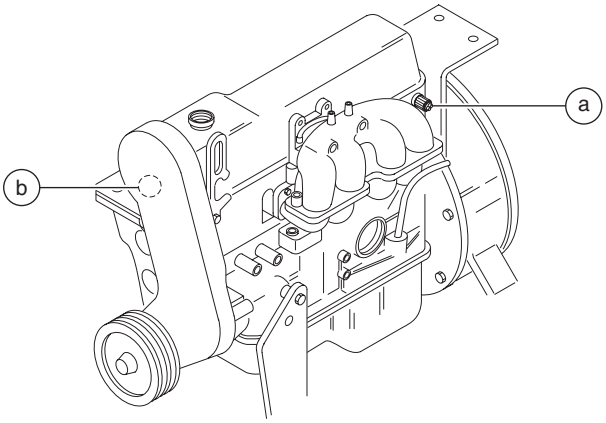
⚠CAUTION Burn hazard. Contact with hot engine fluids or components may cause severe burns.

NOTICE Perform this procedure with the engine off.

1 Release the latches on the engine tray and fully slide the engine tray out.

2 Insert a 6 inch / 15 cm screwdriver or rod into the engine tray lock hole located on the tank side of the engine tray to prevent the engine tray from moving.

3 Locate the oil pressure or coolant temperature switch.



a oil pressure switch
b coolant temperature switch (hidden from view)

4 Tag and disconnect the wiring from the desired switch. Remove the switch from the engine block.

5 Install and tighten the new switch. Torque to specification.

6 Connect the wires to the new switch.

NOTICE Always use pipe thread sealant when installing a sending unit.

Coolant temperature switch specifications	
Torque	8-10 ft-lbs 11-14 Nm
Hex size	13/16 inch
Temperature switch point	230°F 110°C

Oil pressure switch specifications	
Torque	8-10 ft-lbs 11-14 Nm
Hex size	1 1/16 inches
Oil pressure switch point	8 psi 0.55 bar

Ground Controls

REV D

5-1 Auxiliary Platform Lowering

In the event of an engine failure, activating the back-up manual lowering and manual lowering enable switches will lower the platform when the red Emergency Stop buttons are pulled out to the on position at both the ground and platform controls. The auxiliary down switches/buttons are located at the ground control panel. There is no adjustment required.

One 12V DC battery is used to start the engine, power the auxiliary pump and the ECM. The battery is located behind the ground control door assembly.

5-2 Controller Adjustments (after serial number GS9003-41522)

All machine function speeds are determined by the percentage of total ECM voltage output. The speeds of the following machine functions may be adjusted to compensate for wear in the hydraulic pump and drive motors.

- Stowed drive speed
- High torque drive speed
- Raised drive speed
- Platform lift speed
- Platform lower speed
- Steer speed
- Platform settling speed

For further information or assistance, consult the Genie Industries Service Department.

⚠DANGER Tip-over hazard. Do not adjust the lift and/or drive speed higher than specified in this procedure. Setting drive speed greater than specifications could cause the machine to tip over resulting in death or serious injury.

⚠DANGER Tip-over hazard. This procedure must only be performed by a trained service professional. Attempting this procedure without the necessary skills will result in death or serious injury.

NOTICE Select a test area that is firm, level and free of obstructions.

How to Determine the Revision Level

1 Turn the key switch to ground controls and pull out the red Emergency Stop buttons to the on position at both platform and ground controls.

⊙ Result: The revision level of the ECM will appear in the LED display window.

How to Adjust the Stowed Drive Speed

⚠ DANGER Tip-over hazard. Do not adjust the lift and/or drive speed higher than specified in this procedure. Setting drive speed greater than specifications could cause the machine to tip over resulting in death or serious injury.

NOTICE On machines with software revision B1 or lower, stowed drive speeds in forward and reverse are simultaneously adjusted, resulting in both directions of travel operating at the same speed. On machines with software revision C0 or higher, the stowed forward drive speed and the stowed reverse drive speed may be adjusted independent of one another. See 5-2, *How to Determine the Revision Level.*

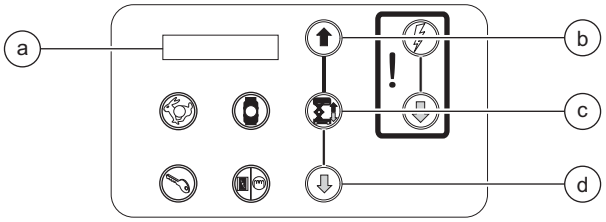
Models with software revision B1 or lower:

1 Pull out the red Emergency Stop button to the on position at the platform controls.

2 Push in the red Emergency Stop button to the off position at the ground controls.

3 Turn the key switch to ground control.

4 Press and hold both the blue platform up and yellow platform down buttons. Pull out the red Emergency Stop button to the on position at the ground controls.



a diagnostic display
b blue platform up button
c lift function enable button
d yellow platform down button

⊙ Result: TUNE SPEEDS is showing in the diagnostic display window. The ECM is now in programming mode.

5 Press the lift function enable button.

6 Use the yellow platform down arrow to scroll to max high speed drive.

⊙ Result: MAX HIGH SPEED DRIVE is showing in the diagnostic display window.

7 Press the lift function enable button.

8 Press the yellow platform down button to decrease the drive speed or press the blue platform up button to increase the drive speed. Refer to Section 2, *Specifications*.

NOTICE The performance achieved should always be within specifications.

9 Press the lift function enable button.

10 Push in the red Emergency Stop button to the off position at the ground controls.

11 Check the stowed drive speed of the machine. Refer to the Maintenance procedure B-15, *Test the Drive Speed - Stowed Position*.

REV D GROUND CONTROLS

Models with software revision C0 or higher:

1 Pull out the red Emergency Stop button to the on position at the platform controls.

2 Push in the red Emergency Stop button to the off position at the ground controls.

3 Turn the key switch to ground control.

4 Press and hold both the blue platform up and yellow platform down buttons. Pull out the red Emergency Stop button to the on position at the ground controls.

⊙ Result: TUNE SPEEDS is showing in the diagnostic display window. The ECM is now in programming mode.

5 Press the lift function enable button.

6 Use the yellow platform down arrow to scroll to max fwd high speed drive.

⊙ Result: MAX FWD HIGH SPEED DRIVE is showing in the diagnostic display window.

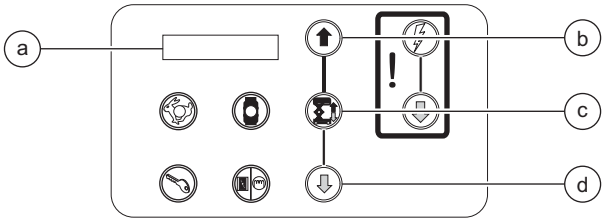
7 Press the lift function enable button.

8 Press the yellow platform down button to decrease the drive speed or press the blue platform up button to increase the drive speed. Refer to Section 2, *Specifications*.

NOTICE The performance achieved should always be within specifications.

9 Press the lift function enable button.

⊙ Result: TUNE SPEEDS is showing in the diagnostic display window. The ECM is now in programming mode.



a diagnostic display
b blue platform up button
c lift function enable button
d yellow platform down button

10 Press the lift function enable button.

11 Use the yellow platform down arrow to scroll to max rev high speed drive.

⊙ Result: MAX REV HIGH SPEED DRIVE is showing in the diagnostic display window.

12 Press the lift function enable button.

13 Press the yellow platform down button to decrease the drive speed or press the blue platform up button to increase the drive speed. Refer to Section 2, *Specifications*.

NOTICE The performance achieved should always be within specifications.

14 Press the lift function enable button.

15 Push in the red Emergency Stop button to the off position at the ground controls.

16 Check the stowed drive speed of the machine. Refer to the Maintenance procedure B-15, *Test the Drive Speed - Stowed Position*.

How to Adjust the High Torque Drive Speed

⚠DANGER Tip-over hazard. Do not adjust the lift and/or drive speed higher than specified in this procedure. Setting drive speed greater than specifications could cause the machine to tip over resulting in death or serious injury.

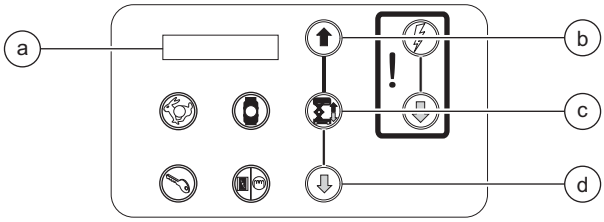
NOTICE On machines with software revision B1 or lower, high torque drive speeds in forward and reverse are simultaneously adjusted, resulting in both directions of travel operating at the same speed.
On machines with software revision C0 or higher, the high torque forward drive speed and the high torque reverse drive speed may be adjusted independent of one another. See 5-2, *How to Determine the Revision Level.*

Models with software revision B1 or lower:

1 Pull out the red Emergency Stop button to the on position at the platform controls.

2 Push in the red Emergency Stop button to the off position at the ground controls.

3 Turn the key switch to ground control.



a diagnostic display
b blue platform up button
c lift function enable button
d yellow platform down button

4 Press and hold both the blue platform up and yellow platform down buttons. Pull out the red Emergency Stop button to the on position at the ground controls.

⊙ Result: TUNE SPEEDS is showing in the diagnostic display window. The ECM is now in programming mode.

5 Press the lift function enable button.

6 Use the yellow platform down arrow to scroll to max high torque drive.

⊙ Result: MAX HIGH TORQUE DRIVE is showing in the diagnostic display window.

7 Press the lift function enable button.

8 Press the yellow platform down button to decrease the drive speed or press the blue platform up button to increase the drive speed. Refer to Section 2, *Specifications*.

NOTICE The performance achieved should always be within specifications.

9 Press the lift function enable button.

10 Push in the red Emergency Stop button to the off position at the ground controls.

REV D GROUND CONTROLS

Models with software revision C0 or higher:

1 Pull out the red Emergency Stop button to the on position at the platform controls.

2 Push in the red Emergency Stop button to the off position at the ground controls.

3 Turn the key switch to ground control.

4 Press and hold both the blue platform up and yellow platform down buttons. Pull out the red Emergency Stop button to the on position at the ground controls.

⊙ Result: TUNE SPEEDS is showing in the diagnostic display window. The ECM is now in programming mode.

5 Press the lift function enable button.

6 Use the yellow platform down arrow to scroll to max fwd high torque drive.

⊙ Result: MAX FWD HIGH TORQUE DRIVE is showing in the diagnostic display window.

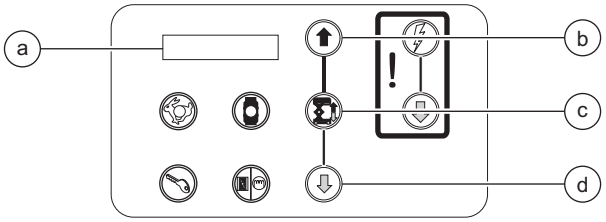
7 Press the lift function enable button.

8 Press the yellow platform down button to decrease the drive speed or press the blue platform up button to increase the drive speed. Refer to Section 2, *Specifications*.

NOTICE The performance achieved should always be within specifications.

9 Press the lift function enable button.

⊙ Result: TUNE SPEEDS is showing in the diagnostic display window. The ECM is now in programming mode.



a diagnostic display
b blue platform up button
c lift function enable button
d yellow platform down button

10 Press the lift function enable button.

11 Use the yellow platform down arrow to scroll to max rev high speed drive.

⊙ Result: MAX REV HIGH TORQUE DRIVE is showing in the diagnostic display window.

12 Press the lift function enable button.

13 Press the yellow platform down button to decrease the drive speed or press the blue platform up button to increase the drive speed. Refer to Section 2, *Specifications*.

NOTICE The performance achieved should always be within specifications.

14 Press the lift function enable button.

15 Push in the red Emergency Stop button to the off position at the ground controls.

How to Adjust the Raised Drive Speed

⚠DANGER Tip-over hazard. Do not adjust the lift and/or drive speed higher than specified in this procedure. Setting drive speed greater than specifications could cause the machine to tip over resulting in death or serious injury.

NOTICE On machines with software revision B1 or lower, raised drive speeds in forward and reverse are simultaneously adjusted, resulting in both directions of travel operating at the same speed. On machines with software revision C0 or higher, the raised forward drive speed and the raised reverse drive speed may be adjusted independent of one another. See 5-2, *How to Determine the Revision Level.*

NOTICE The GS-5390 will not drive with the platform raised above 33 feet / 6.1 m.

Models with software revision B1 or lower:

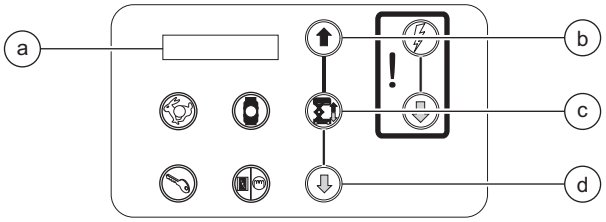
1 Pull out the red Emergency Stop button to the on position at the platform controls.

2 Push in the red Emergency Stop button to the off position at the ground controls.

3 Turn the key switch to ground control.

4 Press and hold both the blue platform up and yellow platform down buttons. Pull out the red Emergency Stop button to the on position at the ground controls.

⊙ Result: TUNE SPEEDS is showing in the diagnostic display window. The ECM is now in programming mode.



a diagnostic display
b blue platform up button
c lift function enable button
d yellow platform down button

5 Press the lift function enable button.

6 Use the yellow platform down arrow to scroll to raised drive speed.

⊙ Result: MAX RAISED DRIVE SPEED is showing in the diagnostic display window.

7 Press the lift function enable button.

8 Press the yellow platform down button to decrease the raised drive speed or press the blue platform up button to increase the raised drive speed. Refer to Section 2, *Specifications*.

NOTICE The performance achieved should always be within specifications.

9 Press the lift function enable button.

10 Push in the red Emergency Stop button to the off position at the ground controls.

11 Check the raised drive speed of the machine. Refer to the Maintenance procedure B-16, *Test the Drive Speed - Raised Position*.

REV D GROUND CONTROLS

Models with software revision C0 or higher:

1 Pull out the red Emergency Stop button to the on position at the platform controls.

2 Push in the red Emergency Stop button to the off position at the ground controls.

3 Turn the key switch to ground control.

4 Press and hold both the blue platform up and yellow platform down buttons. Pull out the red Emergency Stop button to the on position at the ground controls.

⊙ Result: TUNE SPEEDS is showing in the diagnostic display window. The ECM is now in programming mode.

5 Press the lift function enable button.

6 Use the yellow platform down arrow to scroll to max fwd high torque drive.

⊙ Result: MAX FWD RAISED DRIVE SPEED is showing in the diagnostic display window.

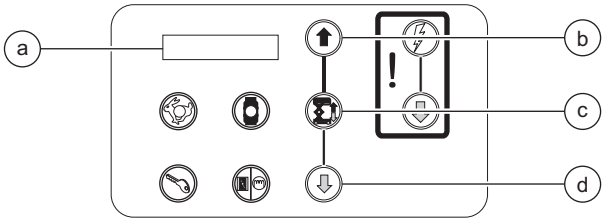
7 Press the lift function enable button.

8 Press the yellow platform down button to decrease the drive speed or press the blue platform up button to increase the drive speed. Refer to Section 2, *Specifications*.

NOTICE The performance achieved should always be within specifications.

9 Press the lift function enable button.

⊙ Result: TUNE SPEEDS is showing in the diagnostic display window. The ECM is now in programming mode.



a diagnostic display
b blue platform up button
c lift function enable button
d yellow platform down button

10 Press the lift function enable button.

11 Use the yellow platform down arrow to scroll to max rev high speed drive.

⊙ Result: MAX REV RAISED DRIVE SPEED is showing in the diagnostic display window.

12 Press the lift function enable button.

13 Press the yellow platform down button to decrease the drive speed or press the blue platform up button to increase the drive speed. Refer to Section 2, *Specifications*.

NOTICE The performance achieved should always be within specifications.

14 Press the lift function enable button.

15 Push in the red Emergency Stop button to the off position at the ground controls.

How to Adjust the Lift Speed

1 Pull out the red Emergency Stop button to the on position at the platform controls.

2 Push in the red Emergency Stop button to the off position at the ground controls.

3 Turn the key switch to ground control.

4 Press and hold both the blue platform up and yellow platform down buttons. Pull out the red Emergency Stop button to the on position at the ground controls.

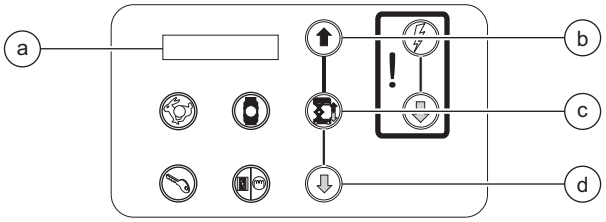
⊙ Result: TUNE SPEEDS is showing in the diagnostic display window. The ECM is now in programming mode.

5 Press the lift function enable button.

6 Use the yellow platform down arrow to scroll to lift speed.

⊙ Result: MAX LIFT SPEED is showing in the diagnostic display window.

7 Press the lift function enable button.



a diagnostic display
b blue platform up button
c lift function enable button
d yellow platform down button

8 Press the yellow platform down button to decrease the maximum lift speed or press the blue platform up button to increase the maximum lift speed. Refer to Section 2, *Specifications*.

NOTICE The performance achieved should always be within specifications.

9 Press the lift function enable button.

10 Push in the red Emergency Stop button to the off position at the ground controls.

11 Check the lift speed of the machine. Refer to Section 2, *Specifications*.

How to Adjust the Platform Lower Speed

1 Pull out the red Emergency Stop button to the on position at the platform controls.

2 Push in the red Emergency Stop button to the off position at the ground controls.

3 Turn the key switch to ground control.

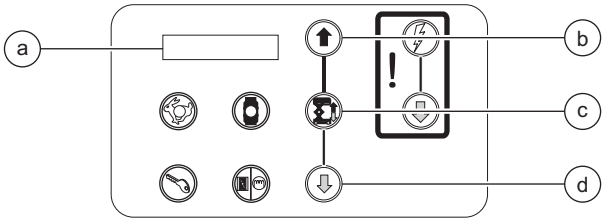
4 Press and hold both the blue platform up and yellow platform down buttons. Pull out the red Emergency Stop button to the on position at the ground controls.

⊙ Result: TUNE SPEEDS is showing in the diagnostic display window. The ECM is now in programming mode.

5 Press the lift function enable button.

6 Use the yellow platform down arrow to scroll to descent speed.

⊙ Result: MAX DESCENT SPEED is showing in the diagnostic display window.



a diagnostic display
b blue platform up button
c lift function enable button
d yellow platform down button

7 Press the lift function enable button.

8 Press the yellow platform down button to decrease the platform descent speed or press the blue platform up button to increase the platform descent speed. Refer to Section 2, *Specifications*.

NOTICE The performance achieved should always be within specifications.

9 Press the lift function enable button.

10 Push in the red Emergency Stop button to the off position at the ground controls.

11 Check the lower speed of the machine. Refer to Section 2, *Specifications*.

How to Adjust the Platform Settling Speed

1 Pull out the red Emergency Stop button to the on position at the platform controls.

2 Push in the red Emergency Stop button to the off position at the ground controls.

3 Turn the key switch to ground control.

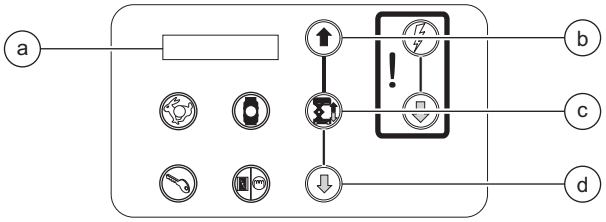
4 Press and hold both the blue platform up and yellow platform down buttons. Pull out the red Emergency Stop button to the on position at the ground controls.

⊙ Result: TUNE SPEEDS is showing in the diagnostic display window. The ECM is now in programming mode.

5 Press the lift function enable button.

6 Use the yellow platform down arrow to scroll to settling speed.

⊙ Result: MAX SETTLING SPEED is showing in the diagnostic display window.



a diagnostic display
b blue platform up button
c lift function enable button
d yellow platform down button

7 Press the lift function enable button.

8 Press the yellow platform down button to decrease the platform settling speed or press the blue platform up button to increase the platform settling speed.

CAUTION Component Damage Hazard. The Platform Settling Speed is intended to slow the rate of platform descent just before the reaching the stowed position. Adjust the Platform Settling Speed until the Platform **Settling** Speed percentage is 3 to 5 points less than the Platform **Lowering** Speed percentage.

9 Press the lift function enable button.

10 Push in the red Emergency Stop button to the off position at the ground controls.

How to Adjust the Steer Speed

1 Pull out the red Emergency Stop button to the on position at the platform controls.

2 Push in the red Emergency Stop button to the off position at the ground controls.

3 Turn the key switch to ground control.

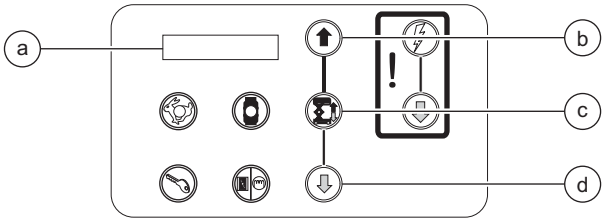
4 Press and hold both the blue platform up and yellow platform down buttons. Pull out the red Emergency Stop button to the on position at the ground controls.

⊙ Result: TUNE SPEEDS is showing in the diagnostic display window. The ECM is now in programming mode.

5 Press the lift function enable button.

6 Use the yellow platform down arrow to scroll to steering speed.

⊙ Result: STEERING SPEED is showing in the diagnostic display window.



a diagnostic display
b blue platform up button
c lift function enable button
d yellow platform down button

7 Press the lift function enable button.

8 Press the yellow platform down button to decrease the steering speed or press the blue platform up button to increase the steering speed.

9 Press the lift function enable button.

10 Push in the red Emergency Stop button to the off position at the ground controls.

5-3
Software Configuration (after serial number GS9003-41522)

How to Configure the Software

The Electronic Control Module (ECM) contains programming for all configurations of the GS-90. Models after serial number GS9003-41522 can be adjusted to a different configuration using the buttons at the ground controls.

ANSI and CSA models:

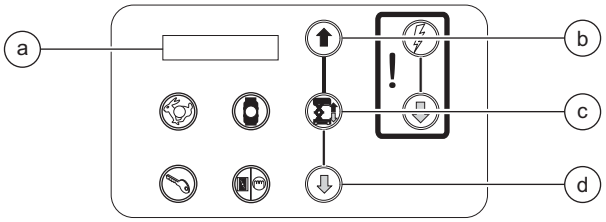
1 Pull out the red Emergency Stop button to the on position at the platform controls.

2 Push in the red Emergency Stop button to the off position at the ground controls.

3 Turn the key switch to ground control.

4 Press and hold both the blue platform up and yellow platform down buttons. Pull out the red Emergency Stop button to the on position at the ground controls.

⊙ Result: TUNE SPEEDS is showing in the diagnostic display window.



a diagnostic display
b blue platform up button
c lift function enable button
d yellow platform down button

5 Use the yellow platform down arrow to scroll to select options.

⊙ Result: SELECT OPTIONS is showing in the diagnostic display window. The ECM is now in programming mode.

6 Press the lift function enable button.

⊙ Result: DESCENT DELAY is showing in the diagnostic display window. Press the lift function enable button to activate or deactivate the descent delay option OR use the yellow platform down arrow to scroll to lift/drive cutout.

⊙ Result: LFT/DRV CUTOUT ON is showing in the diagnostic display window.

⊙ Result: LFT/DRV CUTOUT OFF is showing in the diagnostic display window. Press the lift function enable button to activate the lift/drive cutout option.

NOTICE The lift/drive cutout option should be activated or in the ON position.

7 Use the yellow platform down arrow to scroll to motion alarm.

⊙ Result: MOTION ALARM is showing in the diagnostic display window.

8 Press the lift function enable button to activate or deactivate the motion alarm option OR use the yellow platform down arrow to scroll to motion beacons.

⊙ Result: MOTION BEACONS is showing in the diagnostic display window.

9 Press the lift function enable button to activate or deactivate the motion beacons option.

NOTICE For this option to function correctly, the machine must be equipped with flashing beacons.

10 **Models with platform overload (option):** Use the yellow platform down arrow to scroll to overload.

⊙ Result: OVERLOAD ON is showing in the diagnostic display window.

⊠ Result: OVERLOAD OFF is showing in the diagnostic display window. Press the lift function enable button to activate the overload option.

11 Use the yellow platform down arrow to scroll to sim operation.

⊙ Result: SIM OPERATION ON is showing in the diagnostic display window.

⊠ Result: SIM OPERATION OFF is showing in the diagnostic display window. Press the lift function enable button to activate the sim operation option.

NOTICE For all models except CE, the sim operation option should be activated or in the ON position.

12 Use the yellow platform down arrow to scroll to return to the main menu.

⊙ Result: RETURN TO MAIN MENU is showing in the diagnostic display window.

13 Press the lift function enable button.

⊙ Result: SELECT OPTIONS is showing in the diagnostic display window.

14 Push in the red Emergency Stop button to the off position at the ground controls.

CE models:

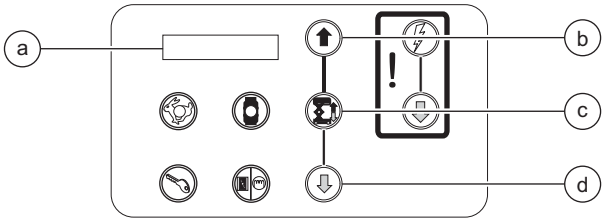
1 Pull out the red Emergency Stop button to the on position at the platform controls.

2 Push in the red Emergency Stop button to the off position at the ground controls.

3 Turn the key switch to ground control.

4 Press and hold both the blue platform up and yellow platform down buttons. Pull out the red Emergency Stop button to the on position at the ground controls.

⊙ Result: TUNE SPEEDS is showing in the diagnostic display window.



a diagnostic display
b blue platform up button
c lift function enable button
d yellow platform down button

5 Use the yellow platform down arrow to scroll to select options.

⊙ Result: SELECT OPTIONS is showing in the diagnostic display window. The ECM is now in programming mode.

6 Press the lift function enable button.

⊙ Result: DESCENT DELAY ON is showing in the diagnostic display window.

⊠ Result: DESCENT DELAY OFF is showing in the diagnostic display window. Press the lift function enable button to activate the descent delay option.

NOTICE For CE models, the descent delay option should be activated or in the ON position.

7 Use the yellow platform down arrow to scroll to lift/drive cutout.

⊙ Result: LFT/DRV CUTOUT ON is showing in the diagnostic display window.

⊠ Result: LFT/DRV CUTOUT OFF is showing in the diagnostic display window. Press the lift function enable button to activate the lift/drive cutout option.

NOTICE The lift/drive cutout option should be activated or in the ON position.

8 Use the yellow platform down arrow to scroll to motion alarm.

⊙ Result: MOTION ALARM is showing in the diagnostic display window.

9 Press the lift function enable button to activate or deactivate the motion alarm option OR use the yellow platform down arrow to scroll to motion beacons.

⊙ Result: MOTION BEACONS is showing in the diagnostic display window.

10 Press the lift function enable button to activate or deactivate the motion beacons option OR use the yellow platform down arrow to scroll to overload.

NOTICE For this option to function correctly, the machine must be equipped with flashing beacons.

⊙ Result: OVERLOAD ON is showing in the diagnostic display window.

⊠ Result: OVERLOAD OFF is showing in the diagnostic display window. Press the lift function enable button to activate the overload option.

NOTICE For CE models, the overload option should be activated or in the ON position.

11 Use the yellow platform down arrow to scroll to sim operation.

⊙ Result: SIM OPERATION OFF is showing in the diagnostic display window.

⊠ Result: SIM OPERATION ON is showing in the diagnostic display window. Press the lift function enable button to deactivate the sim operation option.

NOTICE For CE models, the sim operation option should be deactivated or in the OFF position.

12 Use the yellow platform down arrow to scroll to return to the main menu.

⊙ Result: RETURN TO MAIN MENU is showing in the diagnostic display window.

13 Press the lift function enable button.

⊙ Result: SELECT OPTIONS is showing in the diagnostic display window.

14 Push in the red Emergency Stop button to the off position at the ground controls.

Machine Option Definitions

Descent Delay: This option halts descent at approximately 12 feet / 3.6 m. All controls must be released for 4 to 6 seconds before descent is re-enabled. Required for Europe.

Lift/Drive Cut Out: Lift and drive functions are disabled when the down limit switch is activated and the machine is on a slope exceeding the rating on the serial plate. Activated for all machines.

Motion Alarm: The motion alarm will sound when activating a function.

Motion Beacons: The flashing beacons operate only when activating a function.

Overload: This cuts out all functions when the platform overload pressure switch is tripped. The red Emergency Stop button must be cycled before any function can be resumed. Required for Europe.

Sim Operation: When enabled, this allows some machine functions to be activated simultaneously. Required to be disabled for European models.

Beacons: When installed on the machine, the flashing beacons operate continuously when the key switch is to ground or platform controls and both red Emergency Stop buttons are in the on position.

5-4
Level Sensor - Models without Outriggers (before serial number 41158)

The Electronic Control Module (ECM) is programmed to deactivate the lift and drive functions and activate an alarm when a signal is received from the level sensor.

The tilt alarm sounds when the incline of the chassis exceeds 2° to the side, 3° to the front or 5° to the rear.

How to Install and Calibrate the Level Sensor

⚠ DANGER Tip-over hazard. Failure to install or calibrate the level sensor as instructed could result in the machine tipping over causing death or serious injury. Do not install or calibrate the level sensor other than specified in this procedure.

1 Perform this procedure with the machine on a firm, level surface that is free of obstructions.

2 Remove the platform controls from the platform.

3 Block the wheels at the non-steer end of the machine.

4 Center a lifting jack under the drive chassis at the steer end of the machine.

5 Raise the machine approximately 4 inches / 10 cm.

6 Place a 1.97 x 10 x 10 inch / 5 x 25 x 25 cm thick steel block under both wheels at the steer end of the machine.

7 Lower the machine onto the blocks.

8 Turn the key switch to platform control and pull out the red Emergency Stop buttons to the on position at both the ground and platform controls.

9 Raise the platform approximately 16 feet / 5 m.

⊙ Result: The tilt sensor alarm should not sound and the bubble in the top of the level sensor is centered in the circles.

⊠ Result - ANSI and CSA models before serial number 40820: The tilt alarm will sound at 180 beeps per minute. The level sensor must be calibrated.

⊠ Result - ANSI and CSA models after serial number 40819: The drive function and the lift function will not operate and the tilt alarm will sound at 180 beeps per minute. The level sensor must be calibrated.

⊠ Result - CE and Australian models: The drive function and the lift function will not operate and the tilt alarm will sound at 180 beeps per minute. The level sensor must be calibrated.

If you are not installing a new level sensor, proceed to step 18.

10 Push in the red Emergency Stop button to the off position at the platform controls.

11 Remove the ground control panel retaining fasteners and open the panel.

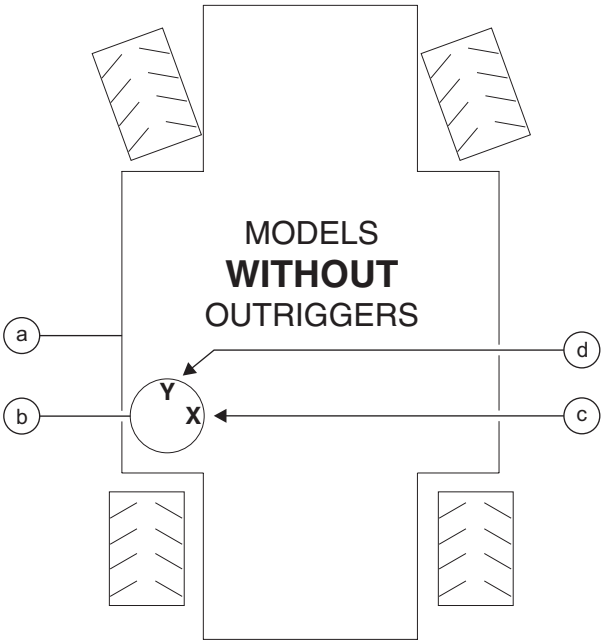
12 Locate the level sensor behind the ground control panel.

13 Tag and disconnect the wire harness from the level sensor.

14 Remove the level sensor retaining fasteners. Remove the level sensor from the machine.

15 Install the new level sensor onto the machine with the "Y" on the level sensor base closest to the steer end of the machine. Install the level sensor retaining fasteners.

⚠ DANGER Tip-over hazard. The tilt level sensor must be installed with the "Y" on the level sensor base closest to the steer end of the machine. Failure to install the tilt level sensor as instructed could result in the machine tipping over causing death or serious injury.



Level sensor - models without outriggers

a chassis
b level sensor
c "X" indicator
d "Y" indicator

16 Connect the wire harness to the level sensor.

17 Pull out the red Emergency Stop button to the on position at the platform controls.

18 Tighten the level sensor adjusting fasteners until the bubble in the top of the level sensor is centered in the circles.

NOTICE Be sure there are threads showing through the top of the adjusting fasteners.

⊙ Result: The tilt sensor alarm should not sound.

19 Lower the platform to the stowed position.

20 Raise the machine slightly.

21 Remove the blocks from under both wheels.

22 Lower the machine and remove the jack.

23 Remove the blocks from the wheels at the non-steer end of the machine.

24 Block the wheels at the steer end of the machine.

25 Center a lifting jack under the drive chassis at the non-steer end of the machine.

26 Raise the machine approximately 12 inches / 30 cm.

27 Place a 10.28 x 10 x 10 inch / 26.11 x 25 x 25 cm thick steel block under both wheels at the non-steer end of the machine.

28 Lower the machine onto the blocks.

GROUND CONTROLS REV D

29 Raise the platform approximately 16 feet / 5 m.

⊙ Result - ANSI and CSA models before serial number 40820: The tilt alarm will sound at 180 beeps per minute.

⊙ Result - ANSI and CSA models after serial number 40819: The drive function and the lift function will not operate and the tilt alarm will sound at 180 beeps per minute.

⊙ Result - CE and Australian models: The drive function and the lift function will not operate and the tilt alarm will sound at 180 beeps per minute.

⊠ Result: The tilt sensor alarm does not sound. Turn the level sensor adjusting nuts just until the level sensor alarm begins to sound.

30 Lower the platform to the stowed position.

31 Raise the machine slightly.

32 Remove the blocks from under both wheels.

33 Lower the machine and remove the jack.

34 Remove the blocks from the wheels at the steer end of the machine.

35 Center a lifting jack under the drive chassis at the ground controls side of the machine.

36 Raise the machine approximately 4 inches / 10 cm.

37 **Models with RT tires:** Place a 2.59 x 10 x 10 inch / 6.58 x 25 x 25 cm thick steel block under both wheels at the ground controls side of the machine.
Models with flotation tires: Place a 2.72 x 10 x 10 inch / 6.91 x 25 x 25 cm thick steel block under both wheels at the ground controls side of the machine.

38 Lower the machine onto the blocks.

39 Raise the platform approximately 16 feet / 5 m.

⊙ Result: The tilt sensor alarm should not sound.

⊠ Result - ANSI and CSA models before serial number 40820: The tilt alarm will sound at 180 beeps per minute. Turn the level sensor adjusting nuts just until the level sensor alarm does not sound.

⊠ Result - ANSI and CSA models after serial number 40819: The drive function and the lift function will not operate and the tilt alarm will sound at 180 beeps per minute. Turn the level sensor adjusting nuts just until the level sensor alarm does not sound.

⊠ Result - CE and Australian models: The drive function and the lift function will not operate and the tilt alarm will sound at 180 beeps per minute. Turn the level sensor adjusting nuts just until the level sensor alarm does not sound.

40 Lower the platform to the stowed position.

41 Raise the machine slightly.

42 Remove the blocks from under both wheels.

43 Lower the machine and remove the jack.

44 Center a lifting jack under the drive chassis at the engine side of the machine.

45 Raise the machine approximately 4 inches / 10 cm.

46 **Models with RT tires:** Place a 3 x 10 x 10 inch / 7.62 x 25 x 25 cm thick steel block under both wheels at the ground controls side of the machine.
Models with flotation tires: Place a 3.15 x 10 x 10 inch / 8 x 25 x 25 cm thick steel block under both wheels at the ground controls side of the machine.

47 Lower the machine onto the blocks.

48 Raise the platform approximately 16 feet / 5 m.

- Result - ANSI and CSA models before serial number 40820: The tilt alarm will sound at 180 beeps per minute.
- Result - ANSI and CSA models after serial number 40819: The drive function and the lift function will not operate and the tilt alarm will sound at 180 beeps per minute.
- Result - CE and Australian models: The drive function and the lift function will not operate and the tilt alarm will sound at 180 beeps per minute.
- Result: If the tilt sensor alarm does not sound, adjust the tilt level sensor until the alarm just begins to sound OR the down limit switch may need to be adjusted.

49 Lower the platform to the stowed position.

50 Push in the red Emergency Stop button to the off position at both the ground and platform controls.

51 Turn the key switch to the off position.

52 Raise the machine slightly.

53 Remove the blocks from under both wheels.

54 Lower the machine and remove the jack.

5-5 Level Sensor - Models without Outriggers (after serial number 41157)

The Electronic Control Module (ECM) is programmed to deactivate the lift and drive functions and activate an alarm when a signal is received from the level sensor.

The tilt alarm sounds when the incline of the chassis exceeds 2° to the side, or 3° to the front or rear.

How to Install and Calibrate the Level Sensor

⚠DANGER Tip-over hazard. Failure to install or calibrate the level sensor as instructed could result in the machine tipping over causing death or serious injury. Do not install or calibrate the level sensor other than specified in this procedure.

1 Perform this procedure with the machine on a firm, level surface that is free of obstructions.

2 Remove the platform controls from the platform.

If you are not installing a new level sensor, proceed to step 10.

3 Push in the red Emergency Stop button to the off position at the platform controls.

4 Remove the ground control panel retaining fasteners and open the panel.

GROUND CONTROLS REV D

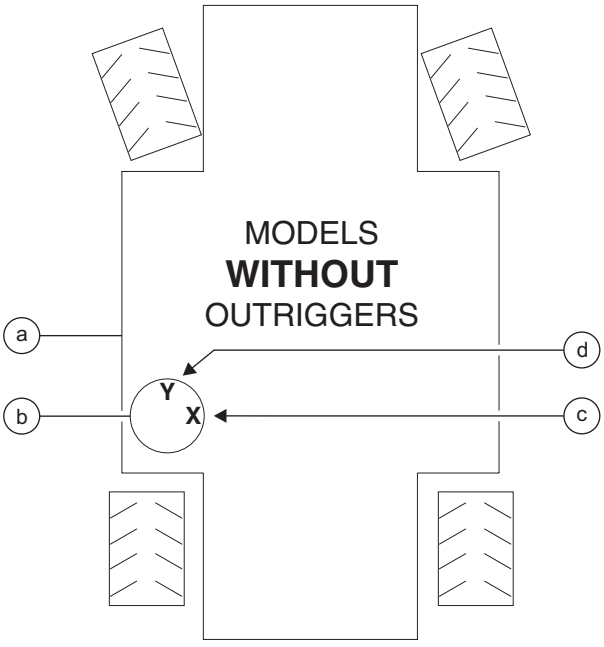
5 Locate the level sensor behind the ground control panel.

6 Tag and disconnect the wire harness from the level sensor.

7 Remove the level sensor retaining fasteners. Remove the level sensor from the machine.

8 Install the new level sensor onto the machine with the "Y" on the level sensor base closest to the steer end of the machine. Install and tighten the level sensor retaining fasteners.

⚠ DANGER Tip-over hazard. The tilt level sensor must be installed with the "Y" on the level sensor base closest to the steer end of the machine. Failure to install the tilt level sensor as instructed could result in the machine tipping over causing death or serious injury.



Level sensor - models without outriggers

a chassis
b level sensor
c "X" indicator
d "Y" indicator

9 Connect the wire harness to the level sensor.

10 Turn the key switch to platform control and pull out the red Emergency Stop buttons to the on position at both the ground and platform controls.

11 Tighten the level sensor adjusting fasteners until the bubble in the top of the level sensor is centered in the circles.

NOTICE Be sure there are threads showing through the top of the adjusting fasteners.

⊙ Result: The tilt sensor alarm should not sound.

12 Center a lifting jack under the drive chassis at the ground controls side of the machine.

13 Raise the machine approximately 4 inches / 10 cm.

14 **Models with RT tires:** Place a 2.59 x 10 x 10 inch / 6.58 x 25 x 25 cm thick steel block under both wheels at the ground controls side of the machine.
Models with flotation tires: Place a 2.72 x 10 x 10 inch / 6.91 x 25 x 25 cm thick steel block under both wheels at the ground controls side of the machine.

15 Lower the machine onto the blocks.

16 Raise the platform approximately 16 feet / 5 m.

⊙ Result: The tilt sensor alarm should not sound.

⊠ Result: The drive function and the lift function will not operate and the tilt alarm will sound at 180 beeps per minute. Turn the level sensor adjusting nuts just until the level sensor alarm does not sound.

17 Lower the platform to the stowed position.

18 Raise the machine slightly.

19 Remove the blocks from under both wheels.

20 Lower the machine and remove the jack.

21 Center a lifting jack under the drive chassis at the engine side of the machine.

22 Raise the machine approximately 4 inches / 10 cm.

23 **Models with RT tires:** Place a 3 x 10 x 10 inch / 7.62 x 25 x 25 cm thick steel block under both wheels at the ground controls side of the machine.
Models with flotation tires: Place a 3.15 x 10 x 10 inch / 8 x 25 x 25 cm thick steel block under both wheels at the ground controls side of the machine.

24 Lower the machine onto the blocks.

25 Raise the platform approximately 16 feet / 5 m.

⊙ Result: The drive function and the lift function will not operate and the tilt alarm will sound at 180 beeps per minute.

⊠ Result: The level sensor alarm does not sound. Adjust the level sensor until the alarm just begins to sound.

26 Lower the platform to the stowed position.

27 Push in the red Emergency Stop button to the off position at both the ground and platform controls.

28 Turn the key switch to the off position.

29 Raise the machine slightly.

30 Remove the blocks from under both wheels.

31 Lower the machine and remove the jack.

5-6 Level Sensor - Models with Outriggers

The Electronic Control Module (ECM) is programmed to deactivate the lift and drive functions and activate an alarm when a signal is received from the level sensor.

When the outriggers are stowed, the tilt alarm sounds when the incline of the chassis exceeds 2° to the side.

When the outriggers are deployed, the tilt alarm sounds when the incline of the chassis exceeds 0.8° to the side.

At all times, the tilt alarm sounds when the incline of the chassis exceeds 3° to the front or rear.

How to Install and Calibrate the Level Sensor

⚠ DANGER Tip-over hazard. Failure to install or calibrate the level sensor as instructed could result in the machine tipping over causing death or serious injury. Do not install or calibrate the level sensor other than specified in this procedure.

1 Perform this procedure with the machine on a firm, level surface that is free of obstructions.

2 Remove the platform controls from the platform.

3 Remove the ground control panel retaining fasteners and open the panel.

4 Locate the level sensor behind the ground control panel.

5 Disconnect the platform controls from the machine at the platform.

6 Open the large ground control panel door and locate the Electronic Control Module (ECM) wire harness to platform controls wire harness connection below the ground controls.

7 Tag and disconnect the platform controls wire harness from the ECM wire harness.

8 Securely connect the platform controls to the ECM wire harness.

If you are not installing a new level sensor, proceed to step 13.

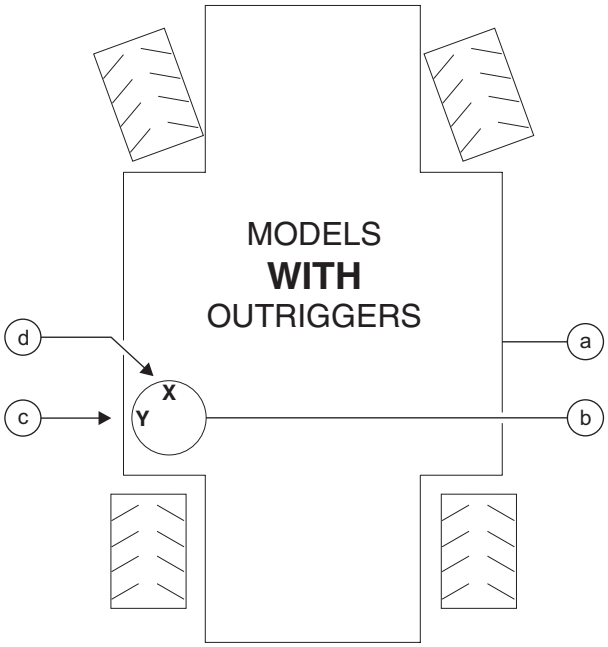
Install the level sensor:

9 Tag and disconnect the wire harness from the level sensor.

10 Remove the three level sensor retaining fasteners. Remove the level sensor from the machine.

11 Install the new level sensor onto the machine with the "X" on the level sensor base closest to the steer end of the machine. Install and tighten the level sensor retaining fasteners.

⚠DANGER Tip-over hazard. The tilt level sensor must be installed with the "X" on the level sensor base closest to the steer end of the machine. Failure to install the tilt level sensor as instructed could result in the machine tipping over causing death or serious injury.



Level sensor - models without outriggers

a chassis
b level sensor
c "Y" indicator
d "X" indicator

12 Connect the wire harness to the level sensor.

13 Turn the key switch to platform control and pull out the red Emergency Stop buttons to the on position at both the ground and platform controls. Start the engine.

14 Set a multimeter to read DC voltage.

Adjust the side-to-side axis:

15 Without disconnecting the wire harness from the level sensor, connect the negative lead of the multimeter to the black wire at the level sensor.

16 Without disconnecting the wire harness from the level sensor, connect the positive lead of the multimeter to the yellow wire at the level sensor.

17 Adjust the side-to-side axis of the level sensor until the multimeter reads 2.5V DC. Tap the top of the level sensor lightly with fingers after each turn of an adjusting nut.

NOTICE Be sure there are threads showing through the top of each adjusting nut.

18 Disconnect the positive lead of the multimeter from the level sensor wire harness

Adjust the front-to-back axis:

19 Without disconnecting the wire harness from the level sensor, connect the positive lead of the multimeter to the blue wire at the level sensor.

20 Adjust the front-to-back axis of the level sensor until the multimeter reads 2.43V DC. Tap the top of the level sensor lightly with fingers after each turn of an adjusting nut.

NOTICE Be sure there are threads showing through the top of each adjusting nut.

21 Disconnect the positive and negative leads.

22 Apply Sentry Seal to the adjusting nuts.

23 Push in the red Emergency Stop button to the off position at the platform controls.

24 **Before serial number 41523:** Press and hold the outrigger enable button and press and hold the auto level button and pull out the red Emergency Stop button to the on position at the platform controls.
After serial number 41522: Press and hold the auto level button and press and hold the left front outrigger button. Pull out the red Emergency Stop button to the on position at the platform controls.

25 **Before serial number 41523:** Continue to hold the outrigger enable button and the auto level button for approximately 3 seconds or until a beep is heard.
After serial number 41522: Continue to hold the auto level button and left front outrigger button for approximately 3 seconds or until a beep is heard.

26 Push in the red Emergency Stop button to the off position at the platform controls.

Confirm the side-to-side level sensor setting:

27 Center a lifting jack under the drive chassis at the ground control side of the machine.

28 Raise the machine approximately 6 inches / 15 cm.

29 **Models with RT tires:** Place a 3 x 10 x 10 inch / 7.62 x 25 x 25 cm thick steel block under both wheels at the ground controls side of the machine
Models with flotation tires: Place a 3.15 x 10 x 10 inch / 8 x 25 x 25 cm thick steel block under both wheels at the ground controls side of the machine.

30 Lower the machine onto the blocks.

31 Pull out the red Emergency Stop button to the on position at platform controls. Start the engine.

32 Raise the platform approximately 16 feet / 5 m.

⊙ Result: The platform stops raising and the tilt alarm will sound at 180 beeps per minute.

⊠ Result: The platform does not stop raising and the tilt alarm does not sound. The level sensor must be replaced. Repeat this procedure beginning with step 9.

NOTICE For reference only, the output of the level sensor should be approximately 1.7V DC. To confirm, connect the positive lead of a multimeter to the yellow wire at the level sensor, and the negative lead to the black wire.

33 Raise the machine slightly.

34 Remove the blocks from under both wheels.

35 Lower the machine and remove the jack.

36 Center a lifting jack under the drive chassis at the tank side of the machine.

37 Raise the machine approximately 6 inches / 15 cm.

38 **Models with RT tires:** Place a 3 x 10 x 10 inch / 7.62 x 25 x 25 cm thick steel block under both wheels at the ground controls side of the machine
Models with flotation tires: Place a 3.15 x 10 x 10 inch / 8 x 25 x 25 cm thick steel block under both wheels at the ground controls side of the machine.

39 Lower the machine onto the blocks.

40 Raise the platform approximately 16 feet / 5 m.

⊙ Result: The platform stops raising and the tilt alarm will sound at 180 beeps per minute.

⊠ Result: The platform does not stop raising and the tilt alarm does not sound. The level sensor must be replaced. Repeat this procedure beginning with step 9.

NOTICE For reference only, the output of the level sensor should be approximately 3.3V DC. To confirm, connect the positive lead of a multimeter to the yellow wire at the level sensor, and the negative lead to the black wire.

41 Lower the platform to the stowed position.

42 Raise the machine slightly.

43 Remove the blocks from under both wheels.

44 Lower the machine and remove the jack.

Confirm the front-to-back level sensor setting:

45 Center a lifting jack under the drive chassis at the steer end of the machine.

46 Raise the machine approximately 6 inches / 15 cm.

47 **Models with RT tires:** Place a 4.36 x 10 x 10 inch / 11.07 x 25 x 25 cm thick steel block under both wheels at the steer end of the machine
Models with flotation tires: Place a 4.58 x 10 x 10 inch / 11.63 x 25 x 25 cm thick steel block under both wheels at the steer end of the machine.

48 Lower the machine onto the blocks.

49 Raise the platform approximately 16 feet / 5 m.

⊙ Result: The platform stops raising and the tilt alarm will sound at 180 beeps per minute.

⊠ Result: The platform does not stop raising and the tilt alarm does not sound. The level sensor must be replaced. Repeat this procedure beginning with step 9.

NOTICE For reference only, the output of the level sensor should be approximately 1.5V DC. To confirm, connect the positive lead of a multimeter to the blue wire at the level sensor, and the negative lead to the black wire.

50 Lower the platform to the stowed position.

51 Raise the machine slightly.

52 Remove the blocks from under both wheels.

53 Lower the machine and remove the jack.

54 Center a lifting jack under the drive chassis at the non-steer end of the machine.

55 Raise the machine approximately 6 inches / 15 cm.

56 **Models with RT tires:** Place a 4.36 x 10 x 10 inch / 11.07 x 25 x 25 cm thick steel block under both wheels at the steer end of the machine
Models with flotation tires: Place a 4.58 x 10 x 10 inch / 11.63 x 25 x 25 cm thick steel block under both wheels at the steer end of the machine.

57 Lower the machine onto the blocks.

58 Raise the platform approximately 16 feet / 5 m.

⊙ Result: The platform stops raising and the tilt alarm will sound at 180 beeps per minute.

⊠ Result: The platform does not stop raising and the tilt alarm does not sound. The level sensor must be replaced. Repeat this procedure beginning with step 9.

NOTICE For reference only, the output of the level sensor should be approximately 3.4V DC. To confirm, connect the positive lead of a multimeter to the blue wire at the level sensor, and the negative lead to the black wire.

59 Lower the platform to the stowed position.

60 Raise the machine slightly.

61 Remove the blocks from under both wheels.

62 Lower the machine and remove the jack.

63 Turn the key switch to the off position.

GROUND CONTROLS REV D

5-7 Engine Fault Codes - Ford Models

How to Retrieve Engine Fault Codes

When a engine malfunction is detected by the Electronic Control Module (ECM), a fault code is recorded and the check engine light will illuminate at the ground controls. Use the following procedure to retrieve the engine fault code to determine the engine malfunction.

NOTICE Perform this procedure with the key switch in the off position.

1 Open the ground controls side cover.

2 Pull out the red Emergency Stop button to the on position at both the ground and platform controls. Turn the key switch to ground controls.

3 Quickly activate and release the start toggle switch/button. Do not start the engine.

4 Move and hold the run/test toggle switch to the test position.

⊙ Result: The check engine light should turn on. The check engine light should begin to blink.

5 Continue to hold the run/test toggle switch in the test position and count the blinks.

NOTICE Fault codes are two or three digits. The check engine light will blink the first digit of a two digit code then will pause for 1.2 seconds and then blink the second digit. For example: the check engine light blinks 5 consecutive times, pauses for 1.2 seconds and then blinks 1 time. That would indicate code 51. The ECM is able to store up to six individual fault codes. There will be a 2.4 second pause between codes.

6 Refer to Section Five for definition of engine fault codes.

NOTICE Once a fault code has been retrieved and the repair has been completed, the ECM memory must be reset to clear the fault code from the ECM. See *How to Clear Engine Fault Codes from the ECM.*

How to Clear Engine Fault Codes from the ECM

NOTICE Perform this procedure with the engine off and the key switch in the off position.

1 Locate the battery under the ground control panel.

2 Disconnect the negative battery cable from the battery for a minimum of 20 minutes.

⚠WARNING Electrocution hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

3 Connect the negative battery cable to the battery.

4 Start the engine and allow it to idle for approximately ten minutes.

⊙ Result: The check engine light should not turn on.

Hydraulic Pumps

REV C

6-1
Lift/Steer Pump

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation.
Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

How to Test the Lift/Steer Pump

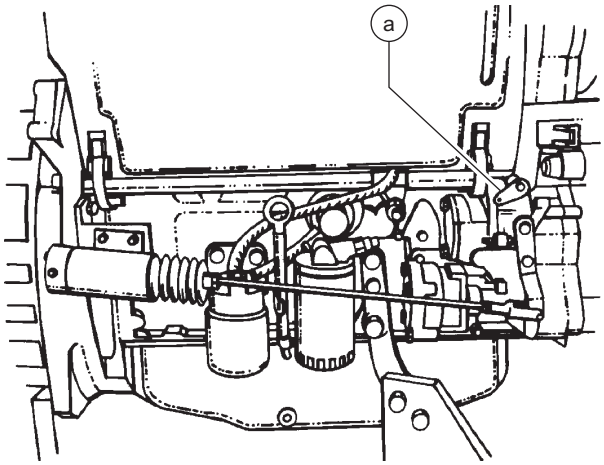
1 Tag, disconnect and plug the high pressure hydraulic hose from the lift/steer pump.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

2 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to the high pressure port on the lift/steer pump.

3 **Ford models:** Close the valve on the LPG tank, then disconnect the hose from the tank (if equipped). Move the fuel select toggle switch at the ground controls to the LPG position.

Deutz models: Hold the manual fuel shut-off lever clockwise in the closed position.



Deutz models
a manual fuel shut-off lever

4 Turn the key switch to ground controls and pull out the red Emergency Stop buttons to the on position at both the ground and platform controls.

5 Observe the pressure gauge while cranking the engine. Immediately stop if the pressure reaches or exceeds 3500 psi / 241 bar.

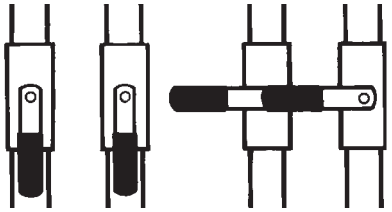
⊙ Result: If the pressure gauge reads 3500 psi /241 bar, immediately stop. The pump is good.

⊙ Result: If the pressure fails to reach 3500 psi /241 bar, the pump or pump coupling is bad and will need to be serviced or replaced.

6 Remove the pressure gauge and connect the hydraulic hose.

How to Remove the Lift/Steer Pump

1 Locate and close the three hydraulic shutoff valves located at the hydraulic tank (if equipped).



open closed

CAUTION Component damage hazard. The engine must not be started with the hydraulic tank shutoff valves in the closed position or component damage will occur. If the tank valves are closed, remove the key from the key switch and tag the machine to inform personnel of the condition.

NOTICE The hydraulic tank shutoff valves can be accessed from under the hydraulic tank tray.

2 Release the latches on the engine tray and fully slide the engine tray out.

3 Insert a 6 inch / 15 cm screwdriver or rod into the engine tray lock hole located near the engine tray roller wheels to prevent the engine tray from moving.

4 Tag, disconnect and plug the hydraulic hoses from the lift/steer pump . Cap the fittings on the pump.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

5 Remove the pump mounting fasteners. Carefully remove the pump.

CAUTION Component damage hazard. Be sure to open the two hydraulic tank valves and prime the pump after installing the pump. See 6-2, *How to Prime the Pump*.

6-2
Drive Pump

The drive pump is a bi-directional variable displacement piston pump. The pump output is controlled by the electronic displacement controller (EDC), located on the pump. The only adjustment that can be made to the pump is the neutral or null adjustment. Any internal service to the pump should only be performed at an authorized Sundstrand-Sauer service center. Contact the Genie Industries Service Department to locate your local authorized service center.

How to Remove the Drive Pump

CAUTION Component damage hazard. The work area and surfaces where this procedure will be performed must be clean and free of debris that could get into the hydraulic system and cause severe component damage. Dealer service is recommended.

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation.
Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 Remove the lift/steer pump. See 6-1, *How to Remove the Lift/Steer Pump.*

2 Disconnect the electrical connections at the EDC located on the drive pump.

3 Tag, disconnect and plug the hydraulic hoses from the drive pump. Cap the fittings on the pump.

CAUTION Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

4 Support the drive pump with a suitable lifting device and remove the two drive pump mounting fasteners.

5 Carefully pull the drive pump out until the pump coupler separates from the flex plate.

6 Remove the drive pump from the machine.

CAUTION Component damage hazard.
Be sure to open the two hydraulic tank valves and prime the pump after installing the pump.

NOTICE Before installing the pump, verify proper pump coupler spacing. See 4-2, *Flex Plate*.

How to Prime the Pump

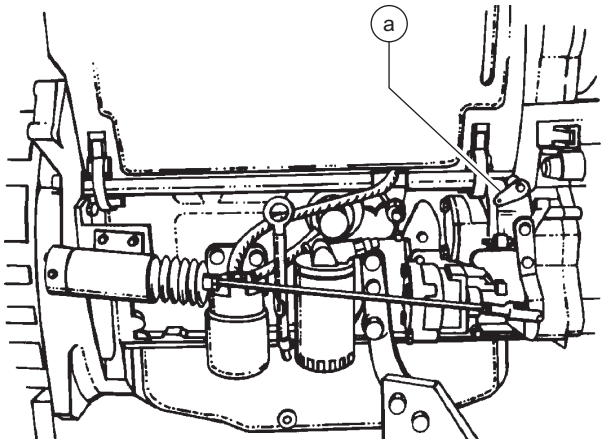
CAUTION Component damage hazard. Be sure that the hydraulic tank shutoff valves are in the open position before priming the pump. The engine must not be started with the hydraulic tank shutoff valves in the closed position or component damage will occur.

1 Connect a 0 to 600 psi / 0 to 50 bar pressure gauge to either diagnostic nipple on the drive manifold.

2 Turn the key switch to ground controls and pull out the red Emergency Stop buttons to the on position at both the ground and platform controls.

3 **Ford models:** Close the valve on the LPG tank, then disconnect the hose from the tank (if equipped). Move the fuel select toggle switch at the ground controls to the LPG position.

Deutz models: Hold the manual fuel shut-off lever clockwise in the closed position.



Deutz models
a manual fuel shut-off lever

4 Crank the engine with the starter motor for 15 seconds, wait 15 seconds, then crank the engine an additional 15 seconds or until the pressure reaches 300 psi / 20.7 bar.

5 **Ford models:** Connect the hose to the LPG tank and open the valve (if equipped). Move the fuel select toggle switch at the ground controls to the gasoline position.
Deutz models: Release the manual fuel shut-off lever.

6 Start the engine from the ground controls and check for hydraulic leaks.

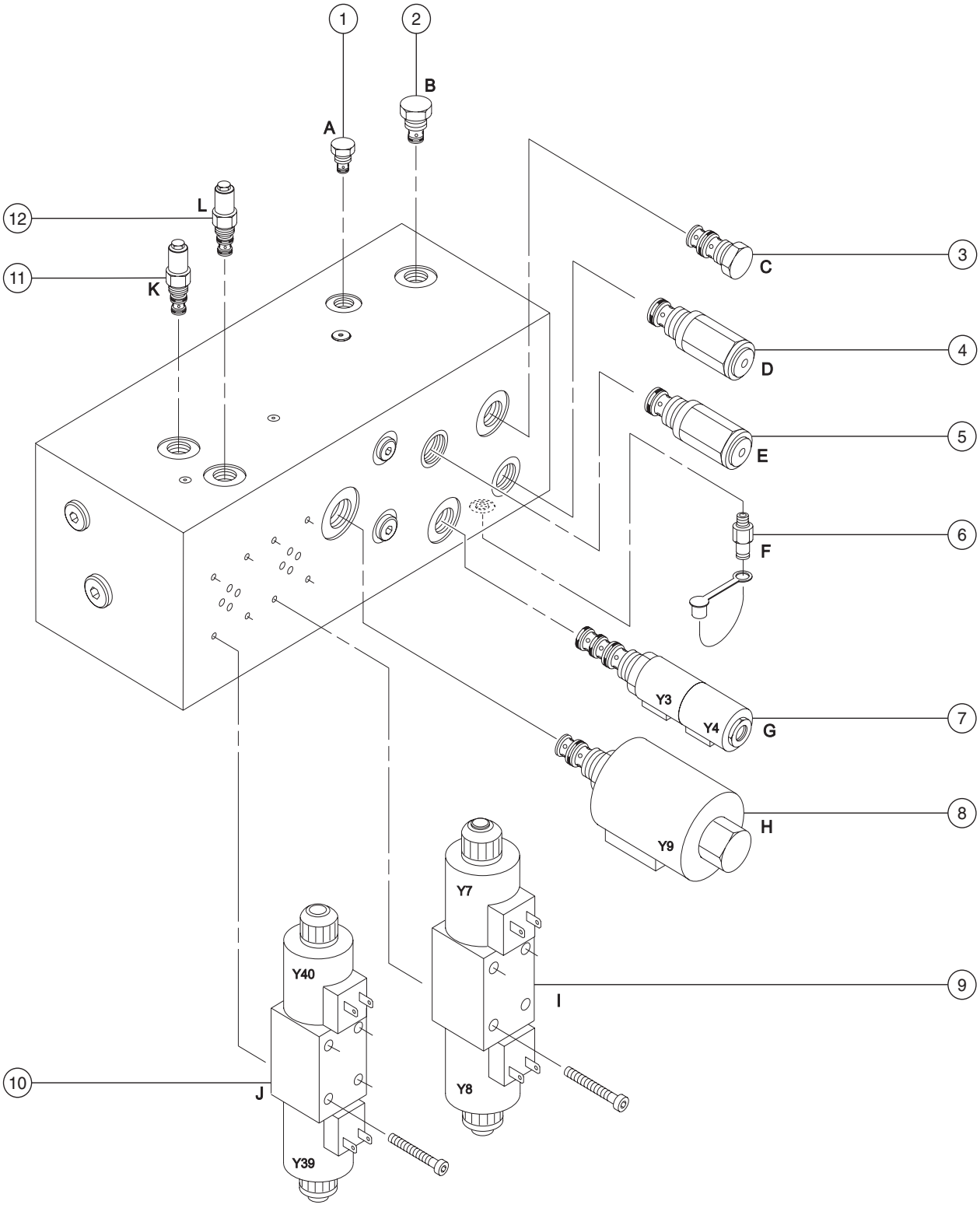
Manifolds

REV E

7-1
Function Manifold Components - Models with Outriggers (before serial number 40519)

The function manifold is located in the chassis tray on the ground controls side of the machine.

Index No.	Description	Schematic Item	Function	Torque
1	Check valve	A	Steer circuit	25 ft-lbs / 34 Nm
2	Check valve	B	Auxiliary pump circuit	20 ft-lbs / 27 Nm
3	Priority flow regulator valve, 2.5 gpm / 9.46 L/min	C	Steer circuit	25 ft-lbs / 34 Nm
4	Relief valve, 3500 psi / 241.3 bar	D	System relief	20 ft-lbs / 27 Nm
5	Relief valve, 2000 psi / 138 bar	E	Steer and outrigger circuit	20 ft-lbs / 27 Nm
6	Diagnostic nipple	F	Testing	
7	Solenoid valve, 3 position 4 way	G	Steer left/right	20 ft-lbs / 27 Nm
8	Proportional solenoid valve	H	All functions	30 ft-lbs / 47 Nm
9	DO3 valve, 3 position 4 way	I	Platform up/down	30-35 in-lbs / 3-4 Nm
10	DO3 valve, 3 position 4 way	J	Outrigger up/down	30-35 in-lbs / 3-4 Nm
11	Counterbalance valve, 3000 psi / 207 bar	K	Outrigger extend circuit	35 ft-lbs / 47 Nm
12	Counterbalance valve, 3000 psi / 207 bar	L	Outrigger retract circuit	35 ft-lbs / 47 Nm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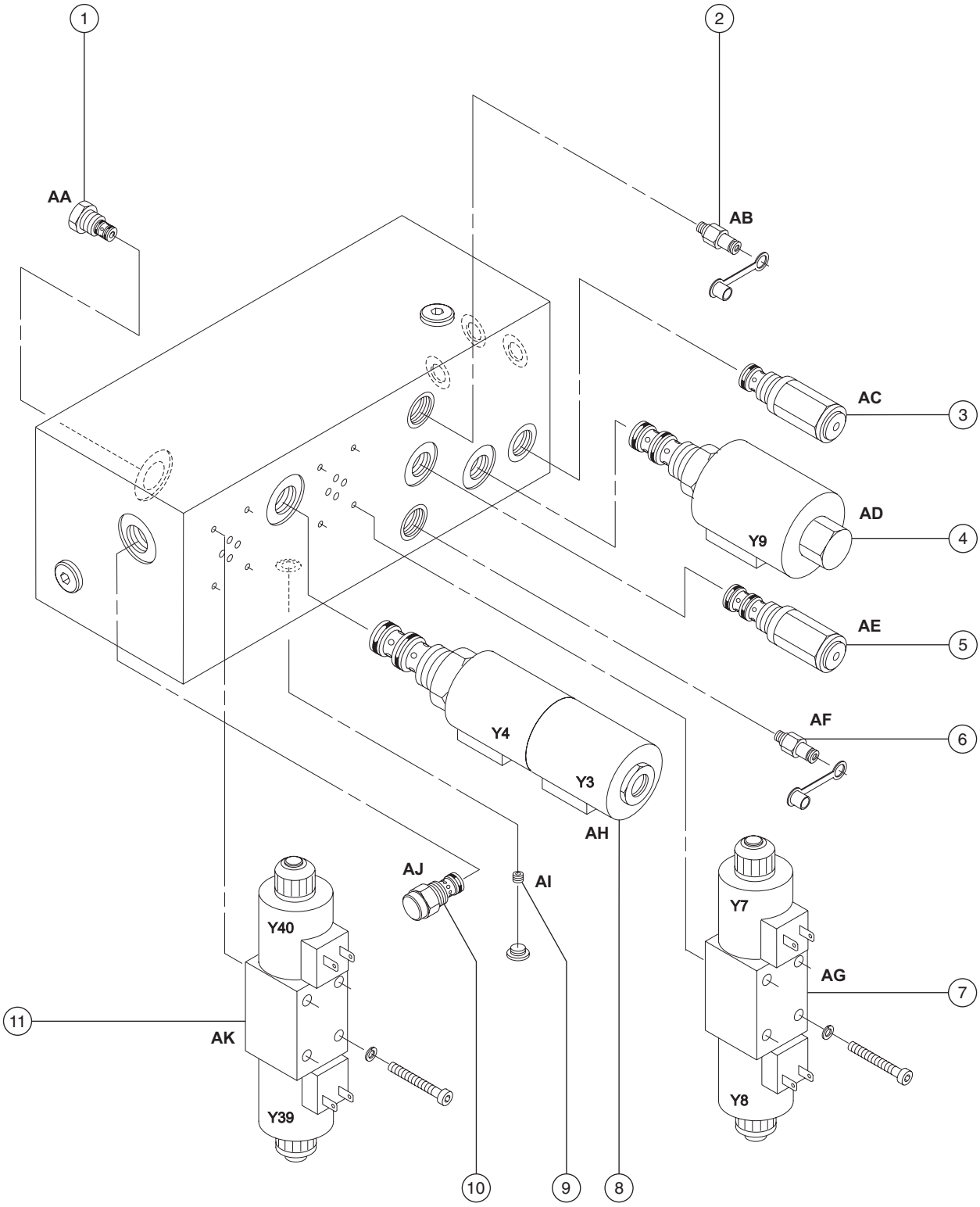
H
8
Y7
Y40
I
9
10
J
Y8
Y39

7-2
Function Manifold Components - Models with Outriggers (after serial number 40518)

The function manifold is located in the chassis tray on the ground controls side of the machine.

Index No.	Description	Schematic Item	Function	Torque
1	Check valve, 5 psi / 0.3 bar	AA	Platform down circuit	20 ft-lbs / 27 Nm
2	Diagnostic nipple	AB	Testing	
3	Relief valve, 3500 psi / 241.3 bar	AC	System relief	20 ft-lbs / 27 Nm
4	Proportional solenoid valve	AD	All functions	35 ft-lbs / 47 Nm
5	Relief valve, 2000 psi / 138 bar	AE	Steering and outrigger circuit	25 ft-lbs / 34 Nm
6	Diagnostic nipple	AF	Testing	
7	DO3 valve, 3 position 4 way	AG	Platform up/down	30-35 in-lbs / 3-4 Nm
8	Solenoid valve, 3 position 4 way	AH	Steer left/right	25 ft-lbs / 34 Nm
9	Orifice - Plug, 0.150 inch / 3.8 mm	AI	Platform down circuit	
10	Flow regulator, 0.1 gpm / 0.38 L/min	AJ	Bleeds off proportional valve to tank	20 ft-lbs / 27 Nm
11	DO3 valve, 3 position 4 way	AK	Outrigger up/down	30-35 in-lbs / 3-4 Nm

REV E MANIFOLDS

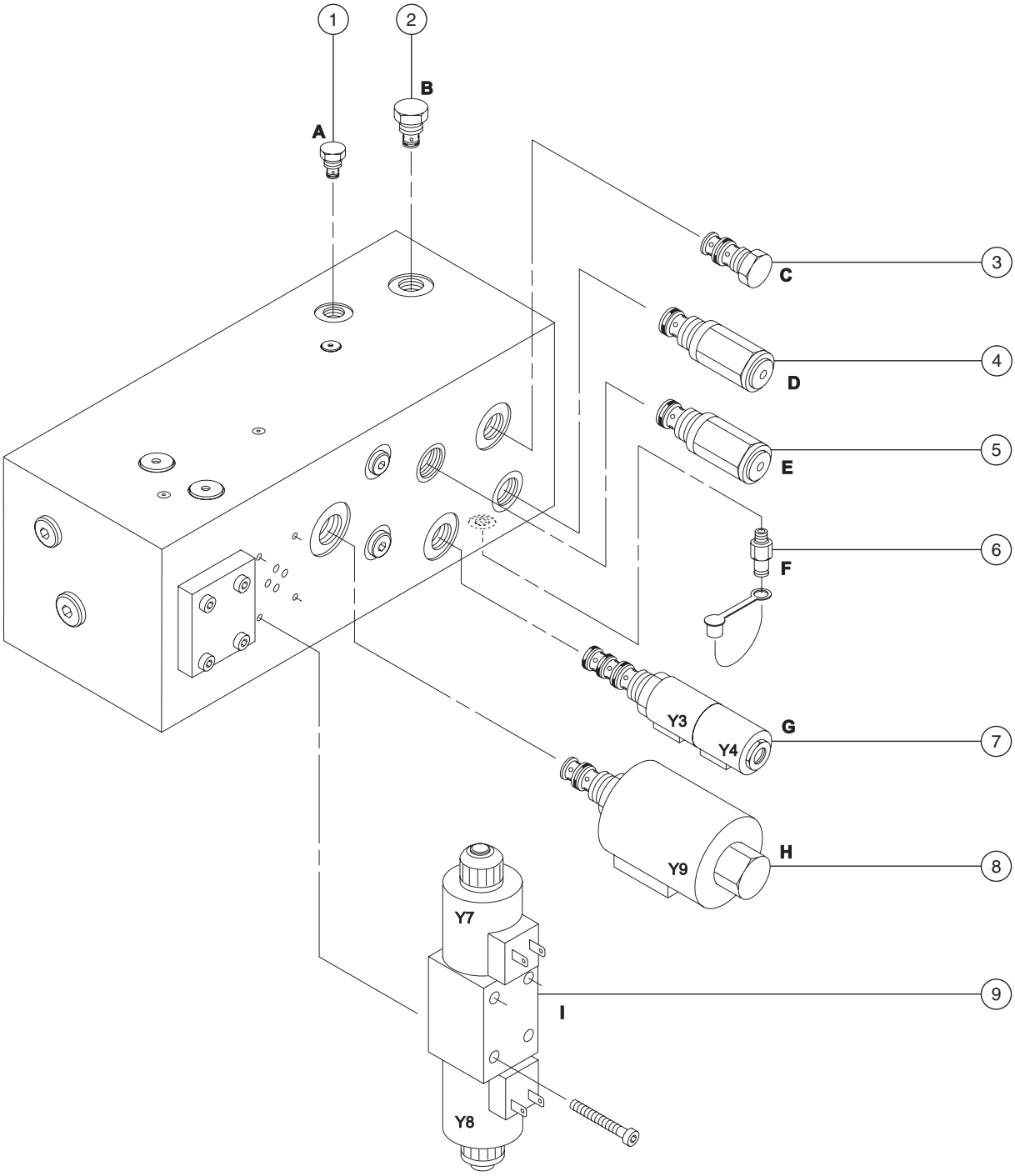


7-3
Function Manifold Components - Models without Outriggers (before serial number 40519)

The function manifold is located in the chassis tray on the ground controls side of the machine.

Index No.	Description	Schematic Item	Function	Torque
1	Check valve	A	Steer circuit	25 ft-lbs / 34 Nm
2	Check valve	B	Auxiliary pump circuit	20 ft-lbs / 27 Nm
3	Priority flow regulator valve, 2.5 gpm / 9.46 L/min	C	Steer circuit	25 ft-lbs / 34 Nm
4	Relief valve, 3500 psi / 241.3 bar	D	System relief	20 ft-lbs / 27 Nm
5	Relief valve, 2000 psi / 138 bar	E	Steer circuit	20 ft-lbs / 27 Nm
6	Diagnostic nipple	F	Testing	
7	Solenoid valve, 3 position 4 way	G	Steer left/right	20 ft-lbs / 27 Nm
8	Proportional solenoid valve	H	All functions	30 ft-lbs / 47 Nm
9	DO3 valve, 3 position 4 way	I	Platform up/down	30-35 in-lbs / 3-4 Nm

REV E MANIFOLDS

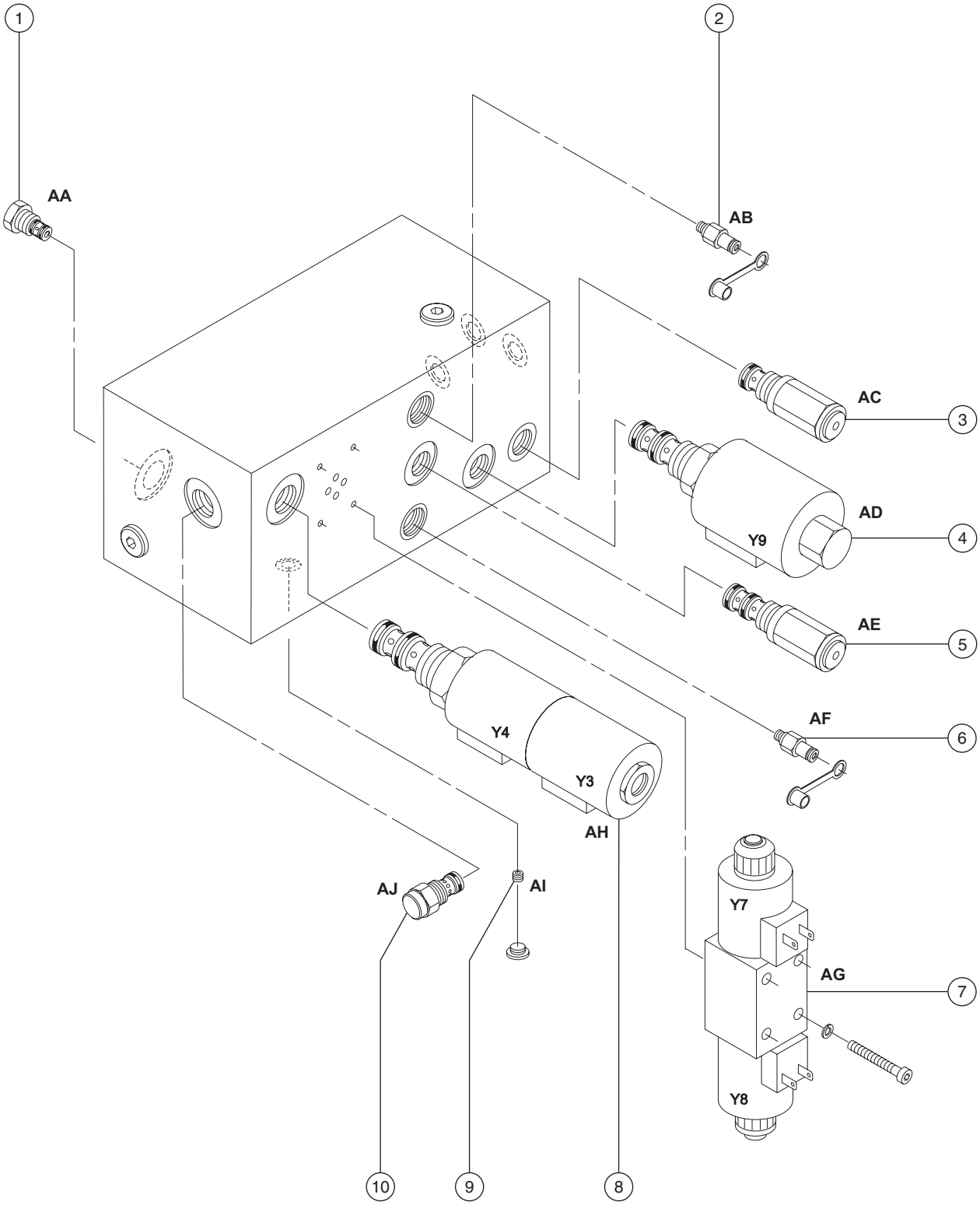


7-4
Function Manifold Components - Models without Outriggers (after serial number 40518)

The function manifold is located in the chassis tray on the ground controls side of the machine.

Index No.	Description	Schematic Item	Function	Torque
1	Check valve, 5 psi / 0.3 bar	AA	Platform down circuit	20 ft-lbs / 27 Nm
2	Diagnostic nipple	AB	Testing	
3	Relief valve, 3500 psi / 241.3 bar	AC	System relief	20 ft-lbs / 27 Nm
4	Proportional solenoid valve	AD	All functions	35 ft-lbs / 47 Nm
5	Relief valve, 2000 psi / 138 bar	AE	Steer circuit	25 ft-lbs / 34 Nm
6	Diagnostic nipple	AF	Testing	
7	DO3 valve, 3 position 4 way	AG	Platform up/down	30-35 in-lbs / 3-4 Nm
8	Solenoid valve, 3 position 4 way	AH	Steer left/right	25 ft-lbs / 34 Nm
9	Orifice - Plug, 0.150 inch / 3.8 mm	AI	Platform down circuit	
10	Flow regulator, 0.1 gpm / 0.38 L/min	AJ	Bleeds off proportional valve to tank	20 ft-lbs / 27 Nm

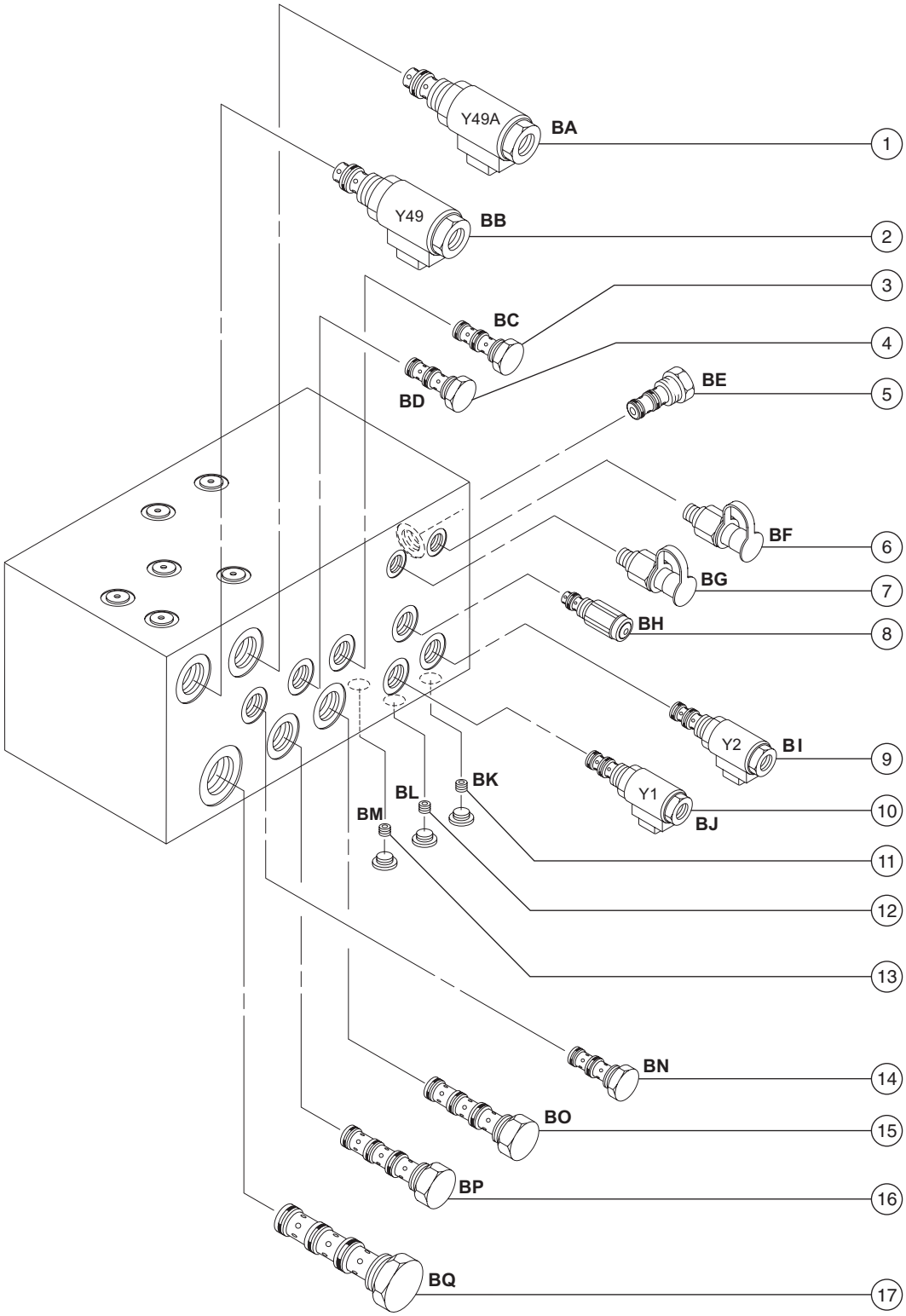
REV E MANIFOLDS



7-5
Drive Manifold Components (before serial number GS9004-41619)

The drive manifold is located under the function manifold.

Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 2 position 2 way	BA	High speed bypass	25 ft-lbs / 34 Nm
2	Solenoid valve, 2 position 2 way	BB	High speed bypass	25 ft-lbs / 34 Nm
3	Flow regulator valve, 2 gpm / 7.6 L/min	BC	Balances flow from flow divider/ combiner (item BO) to rear drive motors	25 ft-lbs / 34 Nm
4	Flow regulator valve, 1.5 gpm / 5.7 L/min	BD	Balances flow from flow divider/ combiner (item BP) to front drive motors	25 ft-lbs / 34 Nm
5	Shuttle valve, 2 position 3 way	BE	Charge pressure circuit that gets hot oil out of low pressure side of drive pump and allows low pressure flow path for brake release and 2-speed motor shift	25 ft-lbs / 34 Nm
6	Diagnostic nipple	BF	Testing "P1" pressure port	
7	Diagnostic nipple	BG	Testing "P2" pressure port	
8	Relief valve, 300 psi / 20.7 bar	BH	Charge pressure circuit	20 ft-lbs / 27 Nm
9	Solenoid valve, 2 position 3 way	BI	Brake release circuit	20 ft-lbs / 27 Nm
10	Solenoid valve, 2 position 3 way	BJ	2-speed motor shift circuit	20 ft-lbs / 27 Nm
11	Orifice - Plug, 0.035 inch / 0.9 mm	BK	Brake circuit	
12	Orifice - Plug, 0.045 inch / 1.1 mm	BL	2-speed motor shift circuit	
13	Orifice - Plug, 0.045 inch / 1.1 mm	BM	2-speed motor shift circuit	
14	Flow regulator valve, 2.5 gpm / 9.5 L/min	BN	Balances flow from flow divider/ combiner (item BQ) to flow divider/ combiner valves BO and BP	25 ft-lbs / 34 Nm
15	Flow divider/combiner valve	BO	Controls flow to non-steer end drive motors in forward and reverse	30 ft-lbs / 41 Nm
16	Flow divider/combiner valve	BP	Controls flow to steer end drive motors in forward and reverse	30 ft-lbs / 41 Nm
17	Flow divider/combiner valve	BQ	Controls flow to flow divider/ combiner valves BO and BP in forward and reverse	50 ft-lbs / 68 Nm


Y49A
BA
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Y49
BB
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BJ
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BK
BL
BM
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BN
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BO
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BP
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BQ
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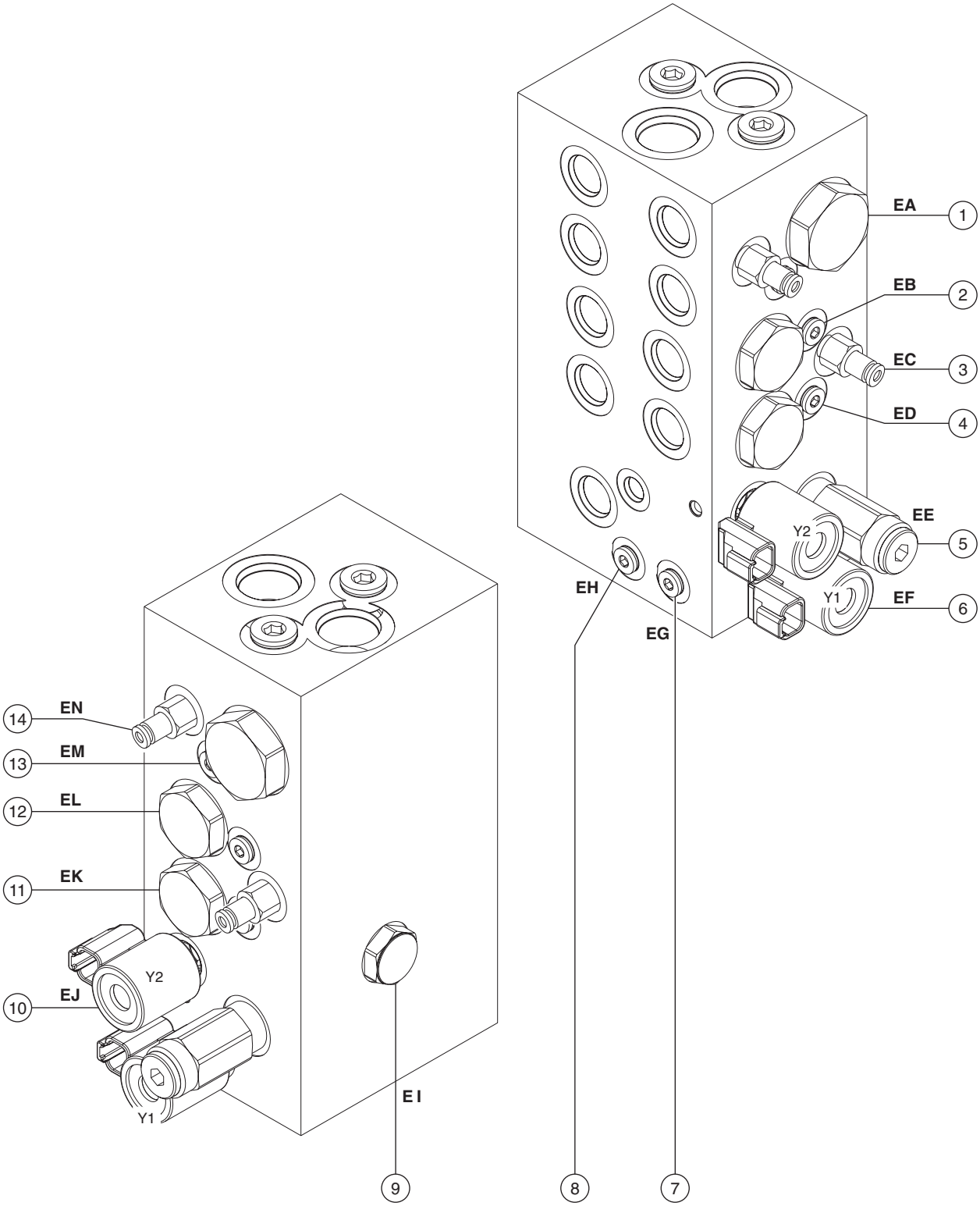
7-6
Drive Manifold Components (after serial number GS9004-41618)

The drive manifold is located under the function manifold.

Index No.	Description	Schematic Item	Function	Torque
1	Flow divider/combiner valve	EA	Controls flow to flow divider/ combiner valves ED and EL in forward and reverse	50 ft-lbs / 68 Nm
2	Orifice - Plug, 0.043 inch / 1.1 mm	EB	Balances flow from flow divider/ combiner (item EL) to front drive motors	
3	Diagnostic nipple	EC	Testing "P2" pressure port	
4	Orifice - Plug, 0.046 inch / 1.2 mm	ED	Balances flow from flow divider/ combiner (item ED) to rear drive motors	25 ft-lbs / 34 Nm
5	Relief valve, 280 psi / 19.3 bar	EE	Charge pressure circuit	20 ft-lbs / 27 Nm
6	Solenoid valve, 2 position 3 way	EF	2-speed motor shift circuit	20 ft-lbs / 27 Nm
7	Orifice - Plug, 0.035 inch / 0.9 mm	EG	Brake circuit	
8	Orifice - Plug, 0.045 inch / 1.1 mm	EH	2-speed motor shift circuit	
9	Shuttle valve, 2 position 3 way	EI	Charge pressure circuit that gets hot oil out of low pressure side of drive pump and allows low pressure flow path for brake release and 2-speed motor shift	25 ft-lbs / 34 Nm
10	Solenoid valve, 2 position 3 way	EJ	Brake release circuit	20 ft-lbs / 27 Nm
11	Flow divider/combiner valve	EK	Controls flow to non-steer end drive motors in forward and reverse	30 ft-lbs / 41 Nm
12	Flow divider/combiner valve	EL	Controls flow to steer end drive motors in forward and reverse	30 ft-lbs / 41 Nm
13	Orifice - Plug, 0.090 inch / 2.3 mm	EM	Balances flow from flow divider/ combiner (item EA) to flow divider/ combiner valves ED and EL	25 ft-lbs / 34 Nm
14	Diagnostic nipple	EN	Testing "P1" pressure port	

REV E MANIFOLDS

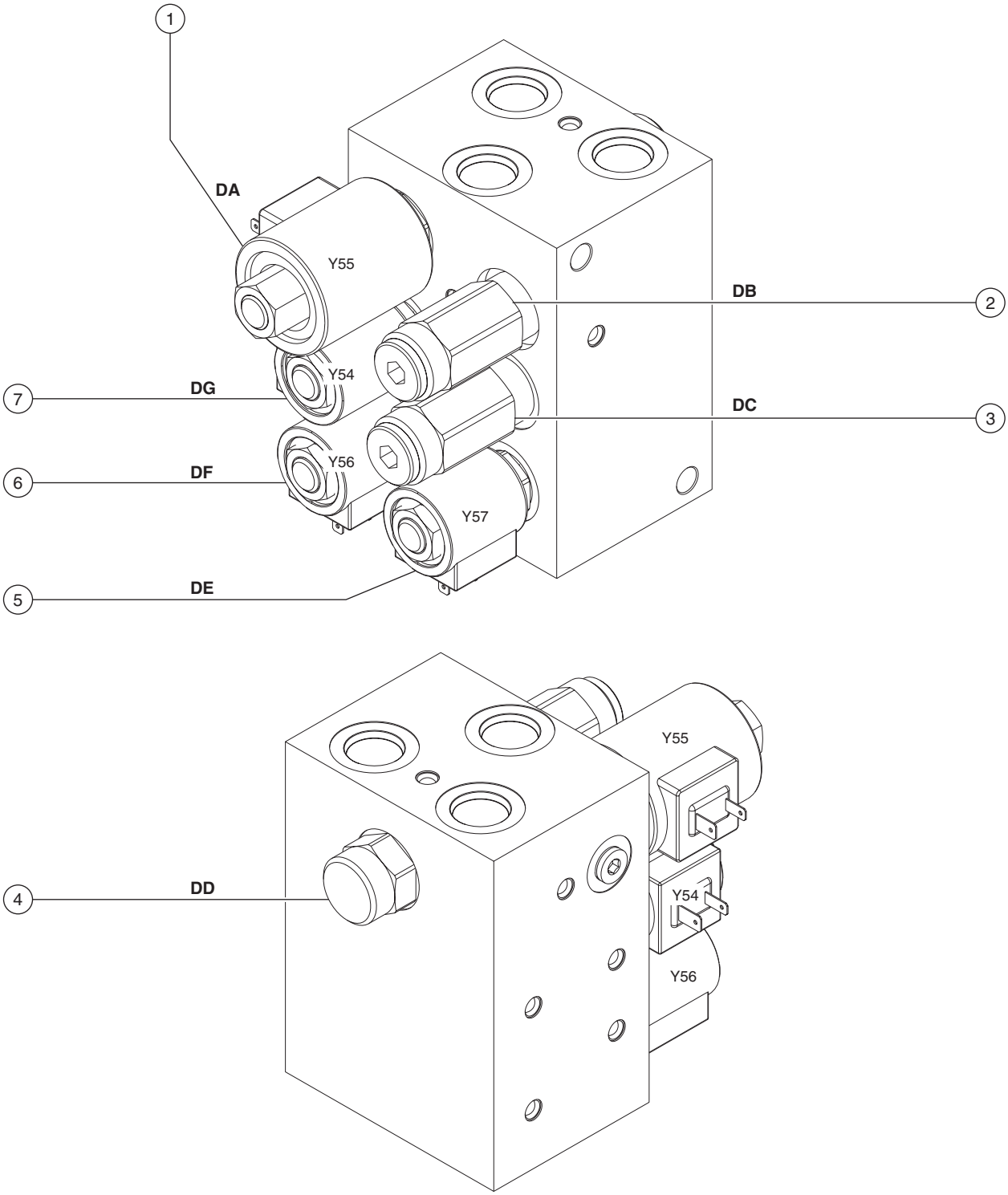


7-7
Oscillate Manifold Components (optional after serial number GS9004-41618)

The oscillate manifold is located under the function manifold.

Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 2 position 2 way	DA	Oscillate activation	25 ft-lbs / 34 Nm
2	Relief valve, 3500 psi / 241.3 bar	DB	System relief	20 ft-lbs / 27 Nm
3	Relief valve, 900 psi / 62 bar	DC	Float circuit relief	20 ft-lbs / 27 Nm
4	Priority flow regulator, 1 gpm / 3.8 L/min	DD	Oscillate circuit	25 ft-lbs / 34 Nm
5	Solenoid valve, 2 position 3 way	DE	Right oscillate circuit	20 ft-lbs / 27 Nm
6	Solenoid valve, 2 position 3 way	DF	Left oscillate circuit	20 ft-lbs / 27 Nm
7	Solenoid valve, 2 position 2 way	DG	Oscillate float	25 ft-lbs / 34 Nm

REV E MANIFOLDS



7-8 Valve Adjustments - Function Manifold

How to Adjust the System Relief Valve

NOTICE Perform this procedure with the platform in the stowed position.

1 Connect a 0 to 5000 psi / 0 to 350 bar pressure gauge to the test port (item F or AB) on the function manifold.

2 Start the engine from the ground controls.

3 Simultaneously move and hold the function enable and the platform up/down toggle switch in the DOWN direction with the platform fully lowered. Observe the pressure reading on the pressure gauge. Refer to Section 2, *Specifications*.

4 Turn the engine off. Use a wrench to hold the relief valve and remove the cap (item D or AC).

5 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the relief valve cap.

⚠DANGER Tip-over hazard. Do not adjust the relief valve higher than specified.

6 Repeat steps 2 through 3 to confirm the relief valve pressure.

How to Adjust the Steer Relief Valve

NOTICE Perform this procedure with the platform in the stowed position.

1 Connect a 0 to 3000 psi / 0 to 250 bar pressure gauge to the test port (item F or AB) on the function manifold.

2 Start the engine from the platform controls.

3 Press and hold the function enable switch and hold the steer thumb rocker switch in the RIGHT direction. Allow the wheels to completely turn to the right, then continue holding the switch while observing the pressure reading on the pressure gauge. Note the pressure. Refer to Section 2, *Specifications*.

4 Turn the engine off. Use a wrench to hold the relief valve and remove the cap (item E or AE).

5 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the relief valve cap.

⚠DANGER Tip-over hazard. Do not adjust the relief valve higher than specified.

6 Repeat steps 2 through 3 to confirm the relief valve pressure.

7-9 Valve Adjustments - Drive Manifold

How to Adjust the Charge Pressure Relief Valve

1 Connect a 0 to 600 psi / 0 to 50 bar pressure gauge to either test port (item BG or EC) on the drive manifold.

2 Start the engine from the platform controls.

3 Drive the machine slowly in the direction indicated by the blue arrow on the platform controls and observe the pressure reading on the pressure gauge. Refer to Section 2, *Specifications*.

CAUTION Component damage hazard. Driving the machine in reverse will place excessive pressure on the pressure gauge and will damage the gauge. Do not drive the machine in a reverse direction.

4 Turn the engine off. Use a wrench to hold the charge pressure relief valve and remove the cap (item BH or EE).

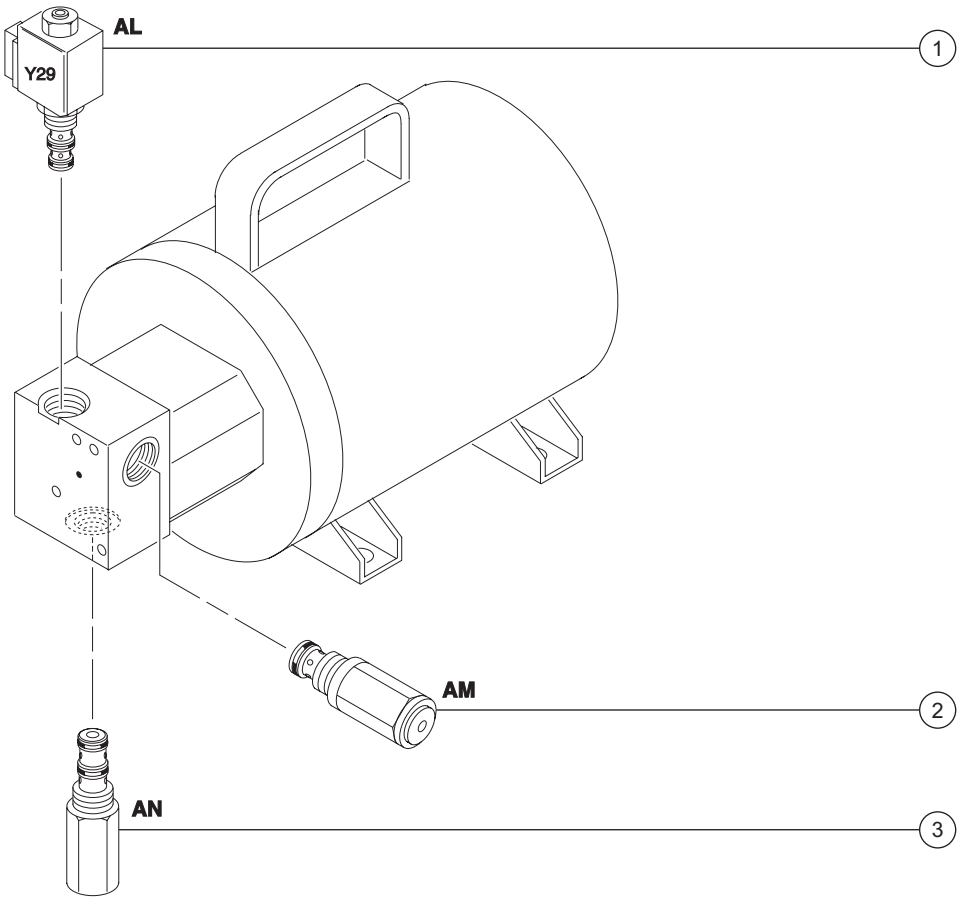
5 Adjust the internal hex socket. Turn it clockwise to increase the pressure or counterclockwise to decrease the pressure. Install the relief valve cap.

6 Repeat steps 2 through 3 to confirm the relief valve pressure.

7-10
Generator Manifold Components

The generator manifold is located below the ground controls.

Index No.	Description	Schematic Item	Function	Torque
1	Solenoid valve, 2 position 3 way	AL	Generator on/off	25 ft-lbs / 34 Nm
2	Flow regulator, 4.3 gpm / 16.3 L/min	AM	Generator speed	20 ft-lbs / 27 Nm
3	Relief valve, 3000 psi / 206.8 bar	AN	Generator circuit	20 ft-lbs / 27 Nm



7-11 Valve Adjustments - Generator Manifold

How to Adjust the Generator Voltage

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

⚠WARNING Electrocution hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

NOTICE Be sure that the hydraulic oil level is within the top 2 inches / 5 cm of the sight gauge.

NOTICE Perform this procedure with the machine on a firm, level surface.

1 Disconnect all electrical tools from the machine.

2 Start the engine from the platform controls.

3 Press the generator select switch.

⊙ Result: The generator should activate and the engine should go to high rpm.

4 Connect an appropriate electrical tool to the electrical outlet at the platform controls and run the tool at full speed.

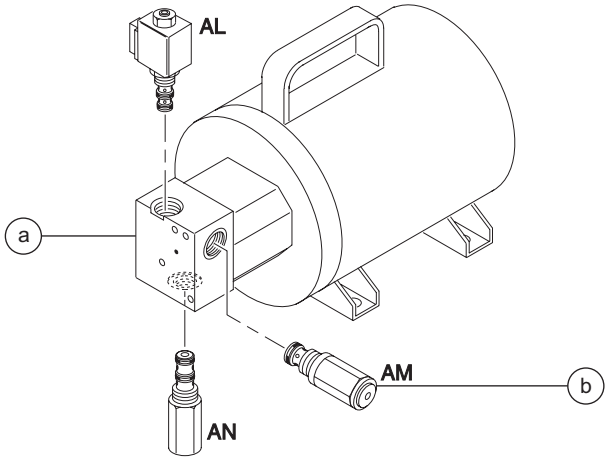
5 Connect the positive and negative leads from a multimeter of sufficient capacity to the electrical outlet at the generator.

⊙ Result: The reading on the multimeter should be 112 to 118V AC.

⊙ Result: If the reading on the multimeter is not 112 to 118V AC, proceed to step 6.

6 Turn the key switch to the off position.

7 Use a wrench to hold the generator flow regulator valve (item AM) and remove the cap.



a generator manifold
b flow regulator

8 Adjust the internal hex socket. Turn it clockwise to increase the AC voltage or counterclockwise to decrease the AC voltage. Install the flow regulator valve cap.

CAUTION Component damage hazard. Failure to adjust the generator as instructed may result in damage to the generator or other electrical equipment. Do not adjust the generator to other than specified.

9 Repeat steps 2 through 5 to confirm the generator AC voltage.

7-12 Valve Coils

How to Test a Coil

A properly functioning coil provides an electromotive force which operates the solenoid valve. Critical to normal operation is continuity within the coil that provides this force field.

⚠WARNING Electrocution hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

1 Tag and disconnect the wiring from the coil to be tested.

2 Test the coil resistance.

⊙ Result: The resistance should be within specification, plus or minus 30%.

⊠ Result: If the resistance is not within specification, plus or minus 30%, replace the coil.

Valve Coil Resistance

Description	Specification
Solenoid valve, 3 position 4 way 10V DC with diode (schematic item G)	8.2 to 10.2Ω
Proportional valve, 12V DC (schematic items H and AD)	3.1 to 5.1Ω
DO3 valve, 3 position 4 way, 10V DC (schematic items I, J, AG and AK)	2.6 to 4.6Ω
Solenoid valve, 3 position 4 way 10V DC with diode (schematic item AH)	6.2 to 8.2Ω
Solenoid valve, 2 position 2 way 10V DC with diode (schematic items BA and BB)	5.7 to 7.7Ω
Solenoid valve, 2 position 3 way 10V (schematic items BI and BJ)	8.2 to 10.2Ω
Solenoid valve, 2 position 2 way 10V DC (schematic items CA, CB, CC and CD)	4.5 to 6.5Ω
Solenoid valve, 2 position 3 way 10V DC (schematic item AL)	5 to 7Ω
Solenoid valve, 2 position 2 way 12V DC with diode (schematic item DA)	6.5 to 8.5Ω
Solenoid valve, 2 position 3 way 12V DC with diode (schematic items DE and DF)	9 to 11Ω
Solenoid valve, 2 position 2 way 12V DC with diode (schematic item DG)	9 to 11Ω
Solenoid valve, 2 position 3 way 10V DC with diode (schematic items EF and EJ)	6 to 8Ω

How to Test a Coil Diode

Genie incorporates spike suppressing diodes in all of its valve coils. Properly functioning coil diodes protect the electrical circuit by suppressing voltage spikes. Voltage spikes naturally occur within a function circuit following the interruption of electrical current to a coil. Faulty diodes can fail to protect the electrical system, resulting in a tripped circuit breaker or component damage.

⚠WARNING Electrocution hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

1 Test the coil for resistance. See 7-12, *How to Test a Coil.*

2 Connect a 10Ω resistor to the negative terminal of a known good 9V DC battery. Connect the other end of the resistor to a terminal on the coil.

NOTICE The battery should read 9V DC or more when measured across the terminals.

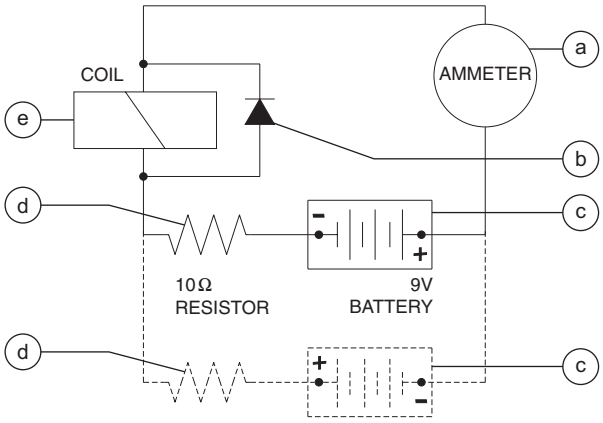
Resistor, 10Ω
Genie part number 27287

3 Set a multimeter to read DC amperage.

NOTICE The multimeter, when set to read DC amperage, should be capable of reading up to 800 mA.

4 Connect the negative lead to the other terminal on the coil.

NOTICE If testing a single-terminal coil, connect the negative lead to the internal metallic ring at either end of the coil.



a multimeter
b diode
c 9V battery
d 10Ω resistor
e coil

Note: Dotted lines in illustration indicate a reversed connection as specified in step 6

5 Momentarily connect the positive lead from the multimeter to the positive terminal on the 9V battery. Note and record the current reading.

6 At the battery or coil terminals, reverse the connections. Note and record the current reading.

⊙ Result: Both current readings are greater than 0 mA and are different by a minimum of 20%. The coil is good.

⊠ Result: If one or both of the current readings are 0 mA, or if the two current readings do not differ by a minimum of 20%, the coil and/or its internal diode are faulty and the coil should be replaced.

Fuel and Hydraulic Tanks

REV C

8-1
Fuel Tank

How to Remove the Fuel Tank

⚠DANGER Explosion and fire hazard. Engine fuels are combustible. Remove the fuel tank in an open, well-ventilated area away from heaters, sparks, flames and lighted tobacco. Always have an approved fire extinguisher within easy reach.

⚠DANGER Explosion and fire hazard. Never drain or store fuel in an open container due to the possibility of fire.

⚠DANGER Explosion and fire hazard. When transferring fuel, connect a grounding strip between the machine and pump or container.

1 Turn the key switch to ground control and pull out the red Emergency Stop buttons to the on position at both the ground and platform controls.

2 Start the engine and raise the platform approximately 18 feet / 5.5 m from the ground.

3 **Before serial number 40351:** Release the safety arm latch, lift the safety arm and rotate down to a vertical position.

After serial number 40350: Release the safety arm latch, lift the safety arm and rotate to a vertical position. Lock the safety arm in position.

NOTICE Be sure that the safety arm is locked in the vertical position.

4 Lower the platform onto the safety arm. Turn the engine off.

⚠WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

5 Attach a lifting strap from an overhead crane to the entry ladder on the hydraulic tank side of the machine.

6 Remove the entry ladder mounting fasteners. Remove the entry ladder from the machine.

⚠WARNING Crushing hazard. The entry ladder could become unbalanced and fall when it is removed from the machine if it is not properly supported.

7 Remove the retaining fasteners from the access plate located behind the hydraulic and fuel tank tray.

8 Locate and close the 2 fuel tank shutoff valves located at the fuel tank (if equipped).

9 Tag, disconnect and plug the fuel supply and return hoses.

10 Remove the fuel filler cap from the tank.

11 Using an approved hand-operated pump, drain the fuel tank into a suitable container. Refer to Section 2, *Specifications*.

⚠DANGER Explosion and fire hazard. When transferring fuel, connect a grounding wire between the machine and pump or container.

NOTICE Be sure to only use a hand operated pump suitable for use with gasoline and/or diesel fuel.

12 Remove the fuel tank hold down strap retaining fasteners. Remove the straps from the fuel tank.

13 Support and secure the fuel tank to an appropriate lifting device.

14 Remove the fuel tank from the machine.

CAUTION Component damage hazard. The fuel tank is plastic and may become damaged if allowed to fall.

NOTICE Clean the fuel tank and inspect for cracks and other damage before installing.

8-2
Hydraulic Tank

The primary functions of the hydraulic tank are to cool, clean and deaerate the hydraulic fluid during operation. It utilizes internal suction strainers for the pump supply lines and has an external return line filter with a filter condition indicator.

How to Remove the Hydraulic Tank

CAUTION Component damage hazard. The work area and surfaces where this procedure will be performed must be clean and free of debris that could get into the hydraulic system.

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation.
Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 Turn the key switch to ground control and pull out the red Emergency Stop buttons to the ON position at both the ground and platform controls.

2 Start the engine and raise the platform approximately 18 feet / 5.5 m from the ground.

3 **Before serial number 40351:** Release the safety arm latch, lift the safety arm and rotate down to a vertical position.

After serial number 40350: Release the safety arm latch, lift the safety arm and rotate to a vertical position. Lock the safety arm in position.

NOTICE Be sure that the safety arm is locked in the vertical position.

4 Lower the platform onto the safety arm. Turn the engine off.

⚠WARNING Crushing hazard. Keep hands clear of the safety arm when lowering the platform.

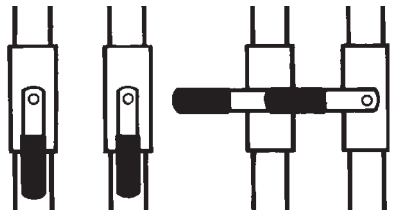
5 Attach a lifting strap from an overhead crane to the entry ladder on the hydraulic tank side of the machine.

6 Remove the entry ladder mounting fasteners. Remove the entry ladder from the machine.

⚠WARNING Crushing hazard. The entry ladder could become unbalanced and fall when it is removed from the machine if it is not properly supported.

7 Remove the retaining fasteners from the access plate located behind the hydraulic and fuel tank tray.

8 Close the two hydraulic shutoff valves located at the hydraulic tank (if equipped).



open closed

CAUTION Component damage hazard. The engine must not be started with the hydraulic tank shutoff valves in the CLOSED position or component damage will occur. If the tank valves are closed, remove the key from the key switch and tag the machine to inform personnel of the condition.

9 Remove the drain plug from the hydraulic tank and completely drain the tank into a suitable container. Refer to Section 2, *Specifications*.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

10 Tag, disconnect and plug the two suction hoses that are attached to the hydraulic tank shutoff valves.

11 Tag, disconnect and plug the tank return hose at the tank.

12 Disconnect and plug the T-fitting located at the tank with the 2 hoses connected to it.

13 Remove the hydraulic tank strap retaining fasteners and remove the hydraulic tank strap from the machine.

14 Support and secure the hydraulic tank to a suitable lifting device.

15 Remove the hydraulic tank from the machine.

⚠WARNING Crushing hazard. The hydraulic tank could become unbalanced and fall if it is not properly supported and secured to the lifting device when it is removed from the machine.

CAUTION Component damage hazard. Be sure to open the two hydraulic tank valves and prime the pump after installing the hydraulic tank. See 6-2, *How to Prime the Pump.*

NOTICE Always use pipe thread sealant when installing the drain plug and strainers.

Steer Axle Components

REV B

9-1
Yoke and Drive Motor

How to Remove the Yoke and Drive Motor

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications*.

1 Block the non-steer wheels and center a lifting jack under the drive chassis at the steer end of the machine.

2 Loosen the wheel lug nuts. Do not remove them.

3 Raise the machine approximately 2 inches / 5 cm. Place blocks under the chassis for support.

⚠WARNING Crushing hazard. The chassis will fall if it is not properly supported.

4 Remove the wheel lug nuts. Remove the tire and wheel assembly.

5 Remove the hose clamps retaining fasteners from the drive motor guard. Remove the hose clamps.

6 Remove the retaining fasteners from the drive motor guard. Remove the drive motor guard from the yoke.

7 Tag, disconnect and plug the hoses from the drive motor. Cap the fittings on the drive motor.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

8 Support and secure the yoke and drive motor assembly to a lifting jack.

9 Remove the cotter pin from the tie rod clevis pin.

NOTICE Always use a new cotter pin when installing a clevis pin.

10 Remove the retaining fastener from the steer cylinder rod end pivot pin. Remove the pivot pin.

11 Remove the retaining fastener from the lower yoke pivot pin.

12 Place a rod through the pin and twist to remove the pin.

13 Repeat steps 11 and 12 for the upper yoke pivot pin.

14 Remove the yoke and drive motor assembly from the machine.

⚠CAUTION Crushing hazard. The yoke and drive motor assembly may become unbalanced and fall if not properly supported and secured to the lifting jack when it is removed from the machine.

Torque specifications	
Drive hub mounting bolts, dry	120 ft-lbs 163 Nm
Drive hub mounting bolts, lubricated	90 ft-lbs 122 Nm
Drive motor mounting bolts, dry	75 ft-lbs 102 Nm
Drive motor mounting bolts, lubricated	56 ft-lbs 76 Nm

How to Remove a Drive Motor

CAUTION Component damage hazard. Repairs to the motor should only be performed by an authorized dealer.

CAUTION Component damage hazard. The work area and surfaces where this procedure will be performed must be clean and free of debris that could get into the hydraulic system and cause severe component damage. Dealer service is recommended.

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications*.

1 Loosen the wheel lug nuts. Do not remove them.

2 Block the non-steer end wheels and center a lifting jack of ample capacity under the steer end of the drive chassis.

3 Raise the machine approximately 2 inches / 5 cm. Place blocks under the chassis for support.

⚠WARNING Crushing hazard. The chassis will fall if it is not properly supported.

4 Remove the wheel lug nuts. Remove the tire and wheel assembly.

5 Remove the hose clamps retaining fasteners from the drive motor guard. Remove the hose clamps.

6 Remove the retaining fasteners from the drive motor guard. Remove the drive motor guard from the yoke.

7 Tag, disconnect and plug the hoses from the drive motor. Cap the fittings on the drive motor.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

8 Remove the drive motor mounting fasteners. Remove the drive motor.

NOTICE There is an O-ring on the drive motor and drive hub assembly. It is installed between the drive motor and drive hub. Be sure that the O-ring is in place when installing the drive motor onto the machine.

Torque specifications	
Drive motor mounting bolts, dry	75 ft-lbs 102 Nm
Drive motor mounting bolts, lubricated	56 ft-lbs 76 Nm

9-2 Steer Cylinder

How to Remove the Steer Cylinder

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose must be replaced and then torqued to specification during installation. Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications*.

1 Tag, disconnect and plug the hydraulic hoses from the steer cylinder. Cap the fittings on the cylinder.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

2 Remove the pin retaining fasteners from the barrel-end pivot pin. Place a rod through the pin and twist to remove the pin.

NOTICE Note the location and the amount of the spacers at the barrel end of the steer cylinder.

3 Remove the pin retaining fasteners from the rod-end pivot pin. Place a rod through the pin and twist to remove the pin.

NOTICE Note the location and the amount of the spacers at the barrel end of the steer cylinder.

4 Remove the steer cylinder from the machine.

9-3
Tie Rod

How to Remove the Tie Rod

1 Remove the cotter pin from each tie rod clevis pin. Remove the clevis pins.

NOTICE Always use a new cotter pin when installing a clevis pin.

NOTICE Note the location and the amount of the spacers at both ends of the tie rod.

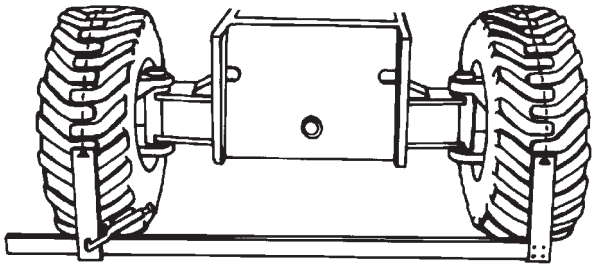
2 Remove the tie rod.

How to Adjust the Toe-in (before serial number 40030)

NOTICE Always perform this procedure on a firm, level surface. Block the non-steering tires and be sure that the platform is in the stowed position.

1 Straighten the steer wheels.

2 Measure the steer tires, front to front and back to back, using a measuring fixture.



3 Center a lifting jack under the front of the chassis and raise the machine until the steer tires are off of the ground.

4 Loosen the jam nut on the adjustable end of the tie rod.

5 Remove the cotter pin from the clevis pin at the adjustable end of the tie rod.

NOTICE Always use a new cotter pin when installing a clevis pin.

6 Slide the tie rod off of the yoke and adjust it by turning the end.

NOTICE One half turn on the adjustable end equals approximately 1/4 inch / 6.4 mm change in the front and rear measurements.

7 Slide the tie rod onto the yoke. Install the clevis pin.

8 Lower the machine.

9 Repeat step 2. If further adjustment is needed, repeat steps 3 through 7.

10 Install a new cotter pin in the tie rod clevis pin

11 Tighten the jam nut on the adjustable end of the tie rod.

Toe-in specification	
Measurement	0 ± 0.125 inch 0 ± 3.2 mm

9-4
Oscillating Axle Option (after serial number GS9004-41618)

How the Oscillating Axle Functions

When driving the GS-90 with the platform in the stowed position, the oscillating axle function ensures that all four wheels maintain solid contact with the ground, delivering the maximum traction available.
When driving the GS-90 with the platform raised above the down limit switch height, the oscillating axle function is limited in that the oscillating cylinders only respond to input from the oscillating axle limit switches, located on the rear axle.

Oscillate Stowed Relay CR84

Terminal 30 of the Oscillate Stowed relay, CR84, receives power from the Platform Down limit switch, LS6. When the platform is raised above LS6, power to terminal 30 will be cut.

Terminal 86 of CR84 is connected to pin J2-C5 at the ECM. Pin J2-C5 is powered anytime the Brake Release valve coil Y5 is energized, thus energizing CR84 terminal 87 and, ultimately, all four oscillating valve coils, allowing oil to pass between the oscillating cylinders. J2-C5 continues to power terminal 86 for 0.5 seconds after Y5 is de-energized.

Oscillate Raised Relay CR85

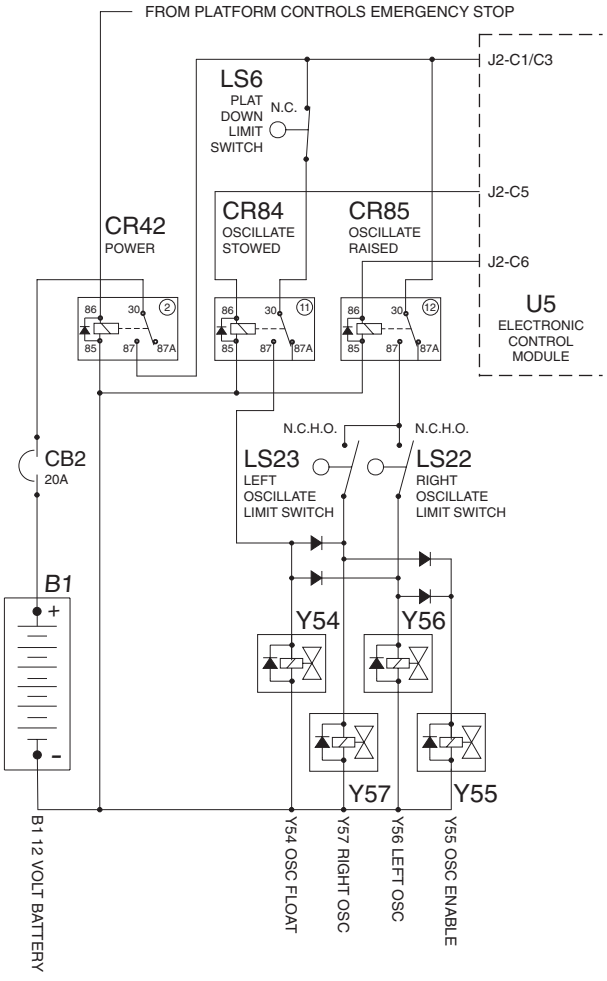
Terminal 30 of the Oscillate Raised relay, CR85, receives power from the Power relay, CR42. When power is cut to terminal 86 of CR42 via key switch or either Emergency Stop button, power to terminal 30 of CR85 will be lost.

Terminal 86 of CR85 receives continuous power from pin J2-C6 when the ECM is powered until an outrigger is lowered to the ground, at which point the power from J2-C6 is cut.

Oscillate Limit Switches LS22, LS23

The right and left oscillating limit switches, LS22 and LS23 respectively, are normally closed limit switches, held in the open position when the machine is on a level surface.

When the left rear or right rear wheel 'drops', the limit switch will relax and close its circuit, sending power to the appropriate oscillating valve coil.



Non-steer Axle Components

REV B

10-1
Drive Motor and Brake

How to Remove a Drive Motor and Brake

CAUTION Component damage hazard. Repairs to the motor should only be performed by an authorized Sundstrand-Sauer dealer.

CAUTION Component damage hazard. The work area and surfaces where this procedure will be performed must be clean and free of debris that could get into the hydraulic system and cause severe component damage. Dealer service is recommended.

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation.
Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 Block the steer wheels.

2 Tag, disconnect and plug the hydraulic hoses from the drive motor and brake. Cap the fittings on the drive motor and brake.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

3 Remove the drive motor mounting fasteners.

4 Slide the drive motor shaft out of the brake and remove the drive motor from the machine.

5 Remove the brake from the drive hub.

NOTICE There are two O-rings on the drive motor and brake assembly. One is installed between the brake and drive hub and another between the brake and drive motor. Be sure that both O-rings are in place when installing the brake and drive motor onto the machine.

Torque specifications	
Drive motor mounting bolts, dry	75 ft-lbs 102 Nm
Drive motor mounting bolts, lubricated	56 ft-lbs 76 Nm

10-2 Drive Hub

How to Remove a Drive Hub

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation.
Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 Remove the drive motor. See 10-1, *How to Remove a Drive Motor and Brake*.

2 Block the steer wheels and center a lifting jack of ample capacity under the drive chassis at the steer end of the machine.

3 Loosen the wheel lug nuts. Do not remove them.

4 Raise the machine approximately 2 inches / 5 cm. Place blocks under the chassis for support.

⚠WARNING Crushing hazard. The chassis will fall if it is not properly supported.

5 Remove the wheel lug nuts. Remove the tire and wheel assembly.

6 Place a second lifting jack under the drive hub for support and secure the drive hub to the lifting jack.

7 Remove the drive hub mounting bolts that attach the drive hub to the axle. Remove the drive hub.

⚠CAUTION Crushing hazard. The drive hub may become unbalanced and fall if it is not properly supported and secured to the lifting jack.

10-3 Oscillating Axle

See 9-4, *Oscillating Axle Option (after serial number GS9004-41618)*

Torque specifications	
Drive hub mounting bolts, dry	120 ft-lbs 163 Nm
Drive hub mounting bolts, lubricated	90 ft-lbs 122 Nm

Outrigger Components

REV A

11-1
Outrigger Cylinder

How to Remove an Outrigger Cylinder (if equipped)

NOTICE Perform this procedure with the platform in the stowed position and the outriggers fully retracted.

NOTICE When removing a hose assembly or fitting, the O-ring on the fitting and/or hose end must be replaced and then torqued to specification during installation.
Refer to Section Two, *Hydraulic Hose and Fitting Torque Specifications.*

1 Remove the outrigger footpad.

2 Remove the mounting fasteners from the outrigger cover. Remove the cover.

3 Tag and disconnect the wiring from the outrigger cylinder solenoid valve.

4 Tag, disconnect and plug the hydraulic hoses from the outrigger cylinder. Cap the fittings on the cylinder.

⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

5 Attach a lifting strap from an overhead crane to the barrel end of the outrigger cylinder for support. Do not apply any lifting pressure.

6 Remove the outrigger cylinder mounting fasteners. Remove the outrigger cylinder from the machine.

⚠CAUTION Crushing hazard. The outrigger cylinder may become unbalanced and fall if not properly supported when it is removed from the machine.

NOTICE If the outrigger cylinder is being replaced, remove the shoulder pin from the barrel end of the outrigger cylinder and install it onto the new cylinder.

Fault Codes

Observe and Obey:

- ☑ Troubleshooting and repair procedures shall be completed by a person trained and qualified on the repair of this machine.
- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating the machine.
- ☑ Unless otherwise specified, perform each repair procedure with the machine in the following configuration:
  - · Machine parked on a firm, level surface
  - · Platform in the stowed position
  - · Key switch in the off position with the key removed
  - · The red Emergency Stop button in the off position at both ground and platform controls
  - · Wheels chocked
  - · All external AC power supply disconnected from the machine

Before Troubleshooting:

- ☑ Read, understand and obey the safety rules and operating instructions in the appropriate operator's manual on your machine.
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.
- ☑ Be aware of the following hazards and follow generally accepted safe workshop practices.

⚠DANGER Crushing hazard. When testing or replacing any hydraulic component, always support the structure and secure it from movement.

⚠WARNING Electrocution hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

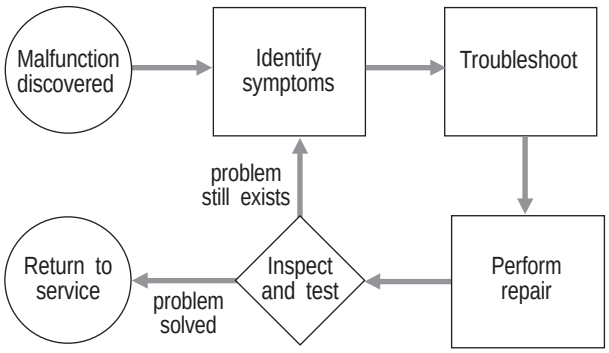
⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

FAULT CODES REV B

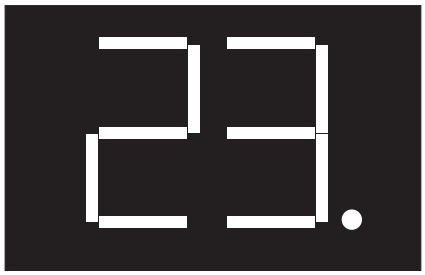
About This Section

When a malfunction is discovered, the fault code charts in this section will help a service professional pinpoint the cause of the problem. To use this section, basic hand tools and certain pieces of test equipment are required—voltmeter, ohmmeter, pressure gauges.

General Repair Process



LED Diagnostic Readout



The diagnostic readout displays numerical codes that provide information about the machine operating status and about malfunctions. The dot to the right of the numbers remain on when a fault code is displayed.

The codes listed in the Fault Code Chart describe malfunctions and can aid in troubleshooting the machine by pinpointing the area or component affected.

REV B

Fault Code Chart
(before serial number GS9003-41523)

Fault Code	Dot	Problem	Possible Causes	Solution
- -	Flash	Normal operation		
01	Solid	Internal ECM error.	EPROM not programmed.	Replace ECM.
02	Solid	ECM/Platform communication error.	Malfunctioning control cable OR malfunctioning platform controls.	Troubleshoot control cable OR troubleshoot platform controls.
03	Solid	Undefined platform DIP switch settings.	DIP switch settings incorrect.	Correct DIP switch settings.
14	Solid	Ground control function enable toggle switch closed at start up.	Malfunctioning ground control function enable switch.	Troubleshoot function enable switch.
20	Flash	Starting aid button fault at platform controls	Faulty switch circuit board in platform control box.	Replace switch circuit board in platform control box.
21	Flash	Engine start button fault at platform controls	Faulty switch circuit board in platform control box.	Replace switch circuit board in platform control box.
22	Flash	Left turn switch fault.	Malfunctioning steer left microswitch.	Troubleshoot steer left microswitch.
23	Flash	Right turn switch fault.	Malfunctioning steer right microswitch.	Troubleshoot steer right microswitch.
26	Flash	Platform up/down switch fault.	Malfunctioning platform up/down switch.	Troubleshoot platform up/down switch.
27	Solid	Platform lift high speed enable fault.	Malfunctioning high speed enable switch.	Troubleshoot platform high speed enable switch OR replace switch.
28	Solid	Platform lift low speed enable fault.	Malfunctioning low speed enable switch.	Troubleshoot platform low speed enable switch OR replace switch.
29	Solid	Platform drive enable switch fault	Malfunctioning platform drive enable switch.	Troubleshoot platform drive enable switch OR replace switch.
30	Solid	Joystick not centered on start up.	Joystick potentiometer not centered.	Verify potentiometer setting.
40	Flash	Right turn coil (Y3) fault.	Malfunctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
41	Flash	Left turn coil (Y4) fault.	Malfunctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
42	Flash	Up coil (Y8) fault.	Malfunctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
43	Flash	Brake coil (Y2) fault.	Malfunctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
44	Flash	Down coil (Y7) fault.	Malfunctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
45	Flash	High speed bypass coil (Y49 and Y49A) fault.	Malfunctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
47	Flash	Function proportional coil (Y9) fault.	Malfunctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
48	Flash	Drive pump proportional coil (Y51) fault.	Malfunctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
55	Flash	Two speed coil (Y1) fault.	Malfunctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
56	Flash	Generator coil fault.	Malfunctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.

Continued on next page

FAULT CODE CHART REV B
(BEFORE SERIAL NUMBER GS9003-41523)

Fault Code	Dot	Problem	Possible Causes	Solution
60	Flash	LPG coil (Y50) fault.	Malfunctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
61	Flash	Diesel shut-off coil fault.	Malfunctioning coil OR wire disconnected from coil.	Troubleshoot coil OR inspect wire connection.
66	Flash	Low oil pressure.	Low engine oil pressure OR defective oil pressure switch.	Check the engine oil level OR check wiring at the oil pressure switch OR check the wiring at the ECM OR replace the oil pressure switch.
67	Flash	High temperature	High engine temperature OR defective engine coolant or oil temperature switch.	**Ford models:** Check the engine radiator coolant level OR check the wiring at the water temperature switch OR check the wiring at the ECM OR replace the water temperature switch. **Deutz models:** Check the engine oil level OR check the wiring at the oil temperature switch OR check the wiring at the ECM OR replace the oil temperature switch.
68	Solid	Low ECM voltage.	Battery discharged.	Charge battery.
69	Flash	Low RPM	Engine idle RPM too low.	Consult Genie Industries Service Department.
70	Flash	High RPM	Engine RPM too high.	Consult Genie Industries Service Department.

REV A

Fault Code Chart
(after serial number GS9003-41522)

Fault Code	LED	Condition	Result	Solution
SYSTEM READY	Green	Normal operation		
01 INTERNAL ECU FAULT	Red	Internal ECM error.	System shutdown.	Replace ECM.
02 PLATFORM ECU FAULT	Red	Platform/ECM communication error.	System shutdown.	Troubleshoot control cable OR troubleshoot platform controls.
20 CHASSIS START SW FAULT	Red	Engine start button fault at ground controls.	Engine will not start.	Replace ECM.
21 CHASSIS CHOKE SW FAULT	Red	Starting aid button fault at ground controls.	Starting aid disabled.	Replace ECM.
22 CHASSIS UP SW FAULT	Red	Up switch fault at ground controls.	Platform up function inoperable.	Replace ECM.
23 CHASSIS LIFT SW FAULT	Red	Platform up/down enable button fault at ground controls.	Platform up/down functions disabled.	Replace ECM.
24 DOWN SW FAULT	Red	Down switch fault at ground controls.	Platform down function disabled.	Replace ECM.
25 LEFT TURN SW FAULT	Red	Left turn switch fault.	Malfunctioning steer left microswitch.	Troubleshoot steer left microswitch.
26 RIGHT TURN SW FAULT	Red	Right turn switch fault.	Malfunctioning steer right microswitch.	Troubleshoot steer right microswitch.
27 DRIVE ENABLE SW FLT	Red	Function enable switch on joystick is activated when machine is turned on.	Machine functions disabled.	Release function enable switch on joystick before power up OR replace joystick.
28 OFF NEUTRAL DRIVE JOYSTICK	Red	Drive joystick off neutral when machine is turned on.	Machine functions disabled.	Release joystick before power up OR replace joystick.
29 PLATFORM LIFT SW FAULT	Red	Lift enable button fault at the platform controls.	Lift function disabled.	Troubleshoot button OR replace printed circuit board at platform controls.
30 OFF NEUTRAL LIFT JOYSTICK	Red	Up/down switch off neutral.	Up/down function disabled.	Replace up/down switch at platform controls.
31 PLATFORM CHOKE SW FAULT	Red	Starting aid fault at the platform controls.	Starting aid disabled.	Troubleshoot button OR replace printed circuit board at platform controls.
32 PLATFORM START SW FAULT	Red	Engine start button fault at platform controls.	Engine will not start.	Troubleshoot button OR replace printed circuit board at platform controls.
33 LEFT FRONT OUTRIG SW FLT	Red	Left front outrigger enable button fault at platform controls.	Outriggers disabled.	Troubleshoot button OR replace printed circuit board at platform controls.

FAULT CODE CHART REV A
(AFTER SERIAL NUMBER GS9003-41522)

Fault Code	LED	Condition	Result	Solution
34 **RIGHT FRONT OUTRIG SW FLT**	Red	Right front outrigger enable button fault at platform controls.	Outriggers disabled.	Troubleshoot button OR replace printed circuit board at platform controls.
35 **LEFT REAR OUTRIG SW FLT**	Red	Left rear outrigger enable button fault at platform controls.	Outriggers disabled.	Troubleshoot button OR replace printed circuit board at platform controls.
36 **RIGHT REAR OUTRIG SW FLT**	Red	Right rear outrigger enable button fault at platform controls.	Outriggers disabled.	Troubleshoot button OR replace printed circuit board at platform controls.
37 **AUTO LEVEL SWITCH FAULT**	Red	Outrigger autolevel enable button fault at platform controls.	Outriggers disabled.	Troubleshoot button OR replace printed circuit board at platform controls.
49 **DRIVE COIL 1 FAULT**	Red	Drive coil 1 (Y1) fault.	High torque drive function will not operate.	Troubleshoot coil OR wiring.
50 **DRIVE COIL 2 FAULT**	Red	Drive coil 2 (Y1A) fault.	High torque drive function will not operate.	Troubleshoot coil OR wiring.
51 **DRIVE COIL 3 FAULT**	Red	Drive coil 3 (Y1B) fault.	High torque drive function will not operate.	Troubleshoot coil OR wiring.
52 **FUNC PROP COIL FAULT**	Red	Proportional coil (Y9) fault.	Lift and outrigger functions are disabled.	Troubleshoot coil OR wiring.
54 **UP COIL FAULT**	Red	Up coil (Y8) fault.	Platform will not raise.	Troubleshoot coil OR wiring.
55 **DOWN COIL FAULT**	Red	Down coil (Y7) fault.	Platform will not lower.	Troubleshoot coil OR wiring.
56 **RIGHT TURN COIL FAULT**	Red	Right turn coil (Y3) fault.	Machine will not turn right.	Troubleshoot coil OR wiring.
57 **LEFT TURN COIL FAULT**	Red	Left turn coil (Y4) fault.	Machine will not turn left.	Troubleshoot coil OR wiring.
58 **BRAKE COIL FAULT**	Red	Brake release coil (Y2) fault.	Brakes will not release.	Troubleshoot coil OR wiring.
60 **FORWARD 1 COIL FAULT**	Red	Forward 1 coil (Y6) fault.	Drives slow or not at all when elevated.	Troubleshoot coil OR wiring.
61 **REVERSE 1 COIL FAULT**	Red	Reverse 1 coil (Y5) fault.	Drives slow or not at all when elevated.	Troubleshoot coil OR wiring.
62 **FORWARD 2 COIL FAULT**	Red	Forward 2 coil (Y6A) fault.	Drives slow or not at all when elevated.	Troubleshoot coil OR wiring.
63 **REVERSE 2 COIL FAULT**	Red	Reverse 2 coil (Y5A) fault.	Drives slow or not at all when elevated.	Troubleshoot coil OR wiring.

REV A

FAULT CODE CHART
(AFTER SERIAL NUMBER GS9003-41522)

Fault Code	LED	Condition	Result	Solution
66 **LOW OIL PRESSURE**	Red	Low oil pressure.	Engine stops.	Check the engine oil level OR check wiring from the oil pressure switch to ECM OR replace the oil pressure switch.
67 **HIGH COOLANT TEMPERATURE**	Red	High coolant temperature.	High engine temperature OR defective engine coolant or oil temperature switch.	**Gasoline/LPG models:** Check the engine radiator coolant level OR check the wiring from the water temperature switch to ECM OR replace the water temperature switch. **Diesel models:** Check the engine oil level OR check the wiring from the oil temperature switch to ECM OR replace the oil temperature switch.
68 **LOW ECU VOLTAGE**	Red	Low ECM voltage.	System shutdown.	Charge battery.
69 **LOW ENGINE RPM**	Red	Low RPM.	Engine idle RPM too low.	Consult Genie Industries Service Department.
70 **HIGH ENGINE RPM**	Red	High RPM.	Engine RPM too high.	Consult Genie Industries Service Department.
80 **LEFT FRONT OTRG COIL FLT**	Red	Left front outrigger coil (Y35) fault.	Left front outrigger disabled.	Troubleshoot coil OR wiring.
81 **LEFT REAR OTRG COIL FLT**	Red	Left rear outrigger coil (Y33) fault.	Left rear outrigger disabled.	Troubleshoot coil OR wiring.
82 **RIGHT FRONT OTRG COIL FLT**	Red	Right front outrigger coil (Y36) fault.	Right front outrigger disabled.	Troubleshoot coil OR wiring.
83 **RIGHT REAR OTRG COIL FLT**	Red	Right rear outrigger coil (Y34) fault.	Right rear outrigger disabled.	Troubleshoot coil OR wiring.
84 **OUTRIGGER EXT COIL FLT**	Red	Outrigger extend coil (Y40) fault.	Outrigger extend function disabled.	Troubleshoot coil OR wiring.
85 **OUTRIGGER RET COIL FLT**	Red	Outrigger retract coil (Y39) fault.	Outrigger retract function disabled.	Troubleshoot coil OR wiring.
86 **OUTRIGGER SLOW COIL FLT**	Red	Outrigger slowdown coil (Y44) fault.	Outrigger slow extend function disabled.	Troubleshoot coil OR wiring.
90 **2 SPEED COIL FAULT**	Red	2 speed coil (Y1) fault	High torque drive function disabled.	Troubleshoot coil OR wiring.
92 **DRIVE FWD PROP COIL FAULT**	Red	Drive pump forward proportional coil (Y51) fault	Drive forward function disabled.	Troubleshoot coil OR wiring.
93 **DRIVE REV PROP COIL FAULT**	Red	Drive pump reverse proportional coil (Y51) fault	Drive reverse function disabled.	Troubleshoot coil OR wiring.
94 **MACHINE TYPE FAULT**	Red	Wrong machine type selected	Machine will not operate.	Correct selection.

Ford Engine ECM Fault Code Chart
(before serial number GS9003-41369)

REV A

Code	Problem	Cause	Solution
11	- - -	- - -	Normal operation
12	Throttle Position (TP) sensor low voltage	Faulty TP sensor OR sensor wires shorted to ground or poor terminal connection.	Check for poor terminal connections or shorted wires from the TP sensor to the ECM OR replace the TP sensor.
14	Manifold Absolute Pressure (MAP) sensor low voltage.	Faulty MAP sensor OR sensor wires shorted to ground or poor terminal connection.	Check for poor terminal connections OR wires shorted to ground OR replace MAP sensor.
21	Engine speed exceeded 4000 RPM.	Obstruction in throttle body OR faulty ECM.	Check for obstructions in the throttle body that could cause binding of the throttle assembly OR replace ECM.
22	Throttle Position (TP) sensor high voltage.	The ECM senses a signal from the TP sensor that is greater than 4.9V DC OR the TP sensor wiring is shorted to ground OR there is a poor terminal connection OR the TP sensor is bad.	Check for poor terminal connections or shorted wires from the TP sensor to the ECM OR replace the TP sensor.
24	Manifold Absolute Pressure (MAP) sensor high voltage.	Faulty MAP sensor OR sensor wires shorted to ground or poor terminal connection.	Check for poor terminal connections or shorted wires from the MAP sensor to the ECM to ground OR replace MAP sensor.
31	Fuel pump low voltage.	Voltage to fuel pump is greater than or equal to 2V DC below ignition voltage.	Test the fuel pump relay, see the Repair Section OR check for poor terminal connection from the fuel pump relay to fuel pump OR replace the fuel pump.
32	Heated Oxygen (HO2) sensor low voltage.	Water in the fuel, misfiring cylinder, plugged fuel filter OR the HO2 sensor wiring is shorted to ground OR there is a poor terminal connection OR the HO2 sensor is bad.	Check for water in the fuel, misfiring cylinder or plugged fuel filter OR check for poor terminal connections or shorted wires from the HO2 sensor to the ECM to ground OR replace HO2 sensor.
33	Engine Coolant Temperature (ECT) sensor high voltage.	Engine is overheating OR sensor wires shorted to ground or poor terminal connections OR ECT sensor is bad.	Check engine coolant level OR check for shorted wires or poor terminal connections from the ECT sensor to the ECM OR replace the ECT sensor.
35	Intake Air Temperature (IAT) sensor high voltage.	IAT sensor signal is greater than or equal to 4.93V DC for at least 3 seconds.	Check for poor terminal connections or shorted wires from the IAT sensor to the ECM to ground OR replace IAT sensor.
41	Fuel pump high voltage.	Fuel pump is receiving voltage when the ECM is not sending the signal to the fuel pump to turn ON.	Test the fuel pump relay, see the Repair Section OR check for poor terminal connections from the fuel pump relay to fuel pump OR replace the ECM.
42	Heated Oxygen (HO2) sensor high voltage.	A leaking or malfunctioning fuel injector, misfiring cylinder, faulty TP sensor or contamination from fuel OR use of improper thread sealant on sensor threads OR sensor wires shorted to ground or poor terminal connections OR HO2 sensor is bad.	Test for a leaking or malfunctioning fuel injector, misfiring cylinder or bad TP sensor. Remove HO2 sensor and check condition of sensor for contamination OR check for poor terminal connections or shorted wires from the HO2 sensor to the ECM to ground OR replace HO2 sensor.

REV A

FORD ENGINE ECM FAULT CODE CHART (BEFORE SERIAL NUMBER GS9003-41369)

Code	Problem	Cause	Solution
43	Engine Coolant Temperature (ECT) sensor low voltage.	ECM detects a excessively low signal voltage from the ECT sensor.	Check engine coolant level OR check for shorted wires or poor terminal connections from the ECT sensor to the ECM OR replace the ECT sensor.
45	Intake Air Temperature (IAT) sensor low voltage.	ECM detects a excessively low signal voltage from the IAT sensor.	The IAT sensor shares the same ground wire as the ECT and MAP sensors. Check for shorted wires or poor terminal connections from the IAT sensor to the ECT and MAP sensors to the ECM OR replace the IAT sensor.
51	Low oil pressure.	Bad oil pressure switch, wires shorted to ground or not enough engine oil.	Check engine oil level OR check for shorted wires or poor terminal connections from the oil pressure switch to the ECM OR replace the oil pressure switch.
52	Crankshaft Position (CKP) sensor senses extra or missing pulses.	The CKP and CMP sensors work together; if one is bad, the other one won't work correctly and causes the ECM to detect a fault. The ECM uses the signal pulses from the CKP and CMP sensors to initiate sequential fuel injection.	Check for shorted wires or poor terminal connections from the CKP and CMP sensors to the ECM OR replace the CKP or CMP sensor.
53	Camshaft Position (CMP) sensor senses unknown pattern.	The CMP and CKP sensors work together; if one is bad, the other one won't work correctly and causes the ECM to detect a fault. The ECM uses the signal pulses from the CKP and CMP sensors to initiate sequential fuel injection.	Check for shorted wires or poor terminal connections from the CKP and CMP sensors to the ECM OR replace the CKP or CMP sensor.
54	ECM Fault - Illegal Operation.	The ECM received an illegal instruction signal from one or more of the sensors and has gone into a default program and then return to normal operation.	Replace the ECM.
55	ECM - Illegal Interruption.	The ECM received an illegal interruption signal from one or more engine sensors and has gone into a default program and then return to normal operation.	Replace the ECM.
56	ECM - Computer Operating Properly (COP) failure.	Under normal operation the ECM will store numbers into memory. If this does not happen, it will reset itself and set fault code 56.	Replace the ECM.
61	System voltage low.	Battery supply voltage to the ECM is 8V DC or less.	Check battery and/or alternator condition OR check for shorted wires or poor terminal connections from the battery to the ECM.
62	System voltage high.	Battery supply voltage to the ECM is 18V DC or more.	Check battery and/or alternator condition OR check for shorted wires or poor terminal connections from the battery to the ECM.

Ford Engine ECM Fault Code Chart
(after serial number GS9003-41368)

REV A

Code	Problem	Cause	Solution
111	Closed Loop Multiplier High (LPG)	Heated Oxygen Sensor wiring and/or connections open or shorted OR sensor is faulty OR there are vacuum leaks or exhaust leaks.	Repair wiring and/or connections OR replace sensor OR repair vacuum and exhaust leaks.
112	HO2S Open/Inactive (Bank 1)	Heated Oxygen Sensor wiring and/or connections open or shorted OR sensor is faulty.	Repair wiring and/or connections OR replace sensor.
113	HO2S Open/Inactive S(Bank 2)	Heated Oxygen Sensor wiring and/or connections open or shorted OR sensor is faulty.	Repair wiring and/or connections OR replace sensor.
114	Post-cat oxygen sensor open	The post cat Heated Oxygen Sensor wiring and/or connections are open or shorted OR sensor is cold, non-responsive or inactive for 60 seconds or longer.	Repair wiring and/or connections OR replace the post cat oxygen sensor.
121	Closed Loop Multiplier High (Gasoline)	Heated Oxygen Sensor wiring and/or connections open or shorted OR sensor is faulty OR there are vacuum leaks or exhaust leaks OR fuel pressure is low OR the fuel injectors need cleaning or replacing.	Repair wiring and/or connections OR replace sensor OR repair any vacuum and exhaust leaks OR test the fuel pressure OR clean or replace the fuel injectors.
122	Closed Loop Multiplier Low (Gasoline)	MAP, IAT or ECT sensors not in correct position OR wiring and/or connections for sensors open or shorted OR sensor is faulty OR one or more fuel injectors are stuck open OR there is electro-magnetic interference from a faulty crankshaft and/or camshaft position sensor.	Adjust or replace sensors OR clean or repair fuel injectors.
124	Closed Loop Multiplier Low (LPG)	Heated Oxygen Sensor wiring and/or connections open or shorted OR sensor is faulty OR fuel quality is poor OR fuel system components may be faulty.	Repair wiring and/or connections OR replace sensor OR replace fuel OR test and repair the fuel system components.
133	Gasoline cat monitor	There are exhaust leaks OR the catalyst system efficiency is below the acceptable level.	Repair exhaust leaks OR there is an emissions compliance issue. Contact Ford Power Products for assistance.
134	LPG cat monitor	There are exhaust leaks OR the catalyst system efficiency is below the acceptable level.	Repair exhaust leaks OR there is an emissions compliance issue. Contact Ford Power Products for assistance.
135	NG cat monitor	There are exhaust leaks OR the catalyst system efficiency is below the acceptable level.	Repair exhaust leaks OR there is an emissions compliance issue. Contact Ford Power Products for assistance.
141	Adaptive Lean Fault - High Limit (Gasoline)	Heated Oxygen Sensor wiring and/or connections open or shorted OR sensor is faulty OR there are vacuum or exhaust leaks OR one or more fuel injectors faulty or stuck closed OR fuel quality is poor OR fuel pressure is too low.	Repair heated oxygen sensor wiring and/or connections OR replace sensor OR repair vacuum and exhaust leaks OR test the fuel pressure OR clean or replace the fuel injectors.
142	Adaptive Rich Fault - Low Limit (Gasoline)	MAP, IAT or ECT sensors not in correct position OR wiring and/or connections for sensors open or shorted OR sensor is faulty OR one or more fuel injectors are stuck closed OR there is electro-magnetic interference from a faulty crankshaft and/or camshaft position sensor.	Adjust or replace sensors OR clean or repair fuel injectors.
143	Adaptive Learn High (LPG)	Heated Oxygen Sensor wiring and/or connections open or shorted OR sensor is faulty OR there are vacuum leaks or exhaust leaks OR fuel quality is poor OR fuel system components may be faulty.	Repair wiring and/or connections OR replace sensor OR repair any vacuum and exhaust leaks OR replace fuel OR test and repair the fuel system components.
144	Adaptive Learn Low (LPG)	Engine wire harness may have an intermittent short to 5V DC or 12V DC OR fuel system components may be faulty.	Repair short in engine wire harness OR test and repair the fuel system components.

REV A

FORD ENGINE ECM FAULT CODE CHART (AFTER SERIAL NUMBER GS9003-41368)

Code	Problem	Cause	Solution
161	System Voltage Low	Battery is faulty OR alternator is not charging OR battery supply wiring to ECM is open or shorted.	Replace battery OR repair alternator OR repair battery supply wiring to ECM.
162	System Voltage High	Alternator is overcharging the battery when engine RPM is greater than 1500 rpm.	Repair or replace the alternator.
211	IAT High Voltage	IAT sensor wiring and/or connections are open or shorted OR sensor is faulty OR engine intake air temperature is too cold.	Repair wiring and/or connections OR replace sensor OR direct warmer air into air intake.
212	IAT Low Voltage	IAT sensor wiring and/or connections are open or shorted OR sensor is faulty OR engine intake air temperature is too hot.	Repair wiring and/or connections OR replace sensor OR direct cooler air into air intake.
213	IAT Higher Than Expected (1)	Air intake temperature is greater than 200° F with the engine greater than 1000 rpm OR air intake system has leaks OR IAT sensor is faulty.	Check air intake system for damage and proper routing of air intake components OR replace the IAT sensor.
214	IAT Higher Than Expected (2)	Air intake temperature is greater than 210° F with the engine greater than 1000 rpm OR air intake system has leaks OR IAT sensor is faulty.	Check air intake system for damage and proper routing of air intake components OR replace the IAT sensor.
215	Oil Pressure Low	Faulty oil pressure sensor OR sensor wiring and/or connections open or shorted OR engine oil level too low.	Replace oil pressure sensor OR repair sensor wiring and/or connections OR fill engine oil level to specification.
221	CHT/ECT High Voltage	Engine cooling system is malfunctioning OR sensor wires and/or connections open or shorted OR sensor is faulty.	Repair engine cooling system problems OR repair open or shorted wiring to sensor OR replace sensor.
222	CHT/ECT Low Voltage	Engine cooling system is malfunctioning and overheating the engine OR sensor wires and/or connections open or shorted OR sensor is faulty OR coolant level is low.	Repair engine cooling system problems OR repair open or shorted wiring to sensor OR replace sensor OR fill engine coolant level to specification.
223	CHT Higher Than Expected (1)	Coolant temperature at the cylinder head is 240° F. Engine cooling system is malfunctioning and overheating the engine OR sensor wires and/or connections open or shorted OR sensor is faulty OR coolant level is low.	Repair engine cooling system problems OR repair open or shorted wiring to sensor OR replace sensor OR fill engine coolant level to specification.
224	CHT Higher Than Expected (2)	Coolant temperature at the cylinder head is 250° F. Engine cooling system is malfunctioning and overheating the engine OR sensor wires and/or connections open or shorted OR sensor is faulty OR coolant level is low.	Repair engine cooling system problems OR repair open or shorted wiring to sensor OR replace sensor OR fill engine coolant level to specification.
231	MAP High Pressure	Open or shorted wiring and/or connections to MAP sensor OR sensor is faulty.	Repair wiring and/or connections to sensor OR replace MAP sensor.
232	MAP Low Voltage	Open or shorted wiring and/or connections to MAP sensor OR sensor is faulty.	Repair wiring and/or connections to sensor OR replace MAP sensor.
234	BP High Pressure	MAP sensor is faulty OR ECM is faulty.	Replace MAP sensor OR replace the ECM.
235	BP Low Pressure	MAP sensor is faulty OR ECM is faulty.	Replace MAP sensor OR replace the ECM.
242	Crank Sync Noise	Crankshaft position sensor wiring and/or connections open or shorted OR there is a poor system ground connection OR sensor is faulty.	Be sure system ground connections are in place and secure OR repair wiring and/or connections to sensor OR replace sensor.
243	Never Crank Synced At Start	Crankshaft position sensor wiring and/or connections open or shorted OR there is a poor system ground connection OR sensor is faulty.	Be sure system ground connections are in place and secure OR repair wiring and/or connections to sensor OR replace sensor.
244	Camshaft Sensor Loss	Camshaft position sensor wiring and/or connections open or shorted OR there is a poor system ground connection OR sensor is faulty.	Be sure system ground connections are in place and secure OR repair wiring and/or connections to sensor OR replace sensor.

Continued on next page

FORD ENGINE ECM FAULT CODE CHART REV A
(AFTER SERIAL NUMBER GS9003-41368)

Code	Problem	Cause	Solution
245	Camshaft Sensor Noise	Camshaft position sensor wiring and/or connections open or shorted OR there is a poor system ground connection OR sensor is faulty.	Be sure system ground connections are in place and secure OR repair wiring and/or connections to sensor OR replace sensor.
253	Knock Sensor Open	Knock sensor wiring and/or connections open or shorted OR sensor is faulty.	Repair wiring and/or connections to knock sensor OR replace knock sensor.
254	Excessive Knock Signal	Knock sensor wiring and/or connections open or shorted OR there is excessive engine vibration OR sensor is faulty.	Check for excessive engine vibration OR repair wiring and/or connections to knock sensor OR replace knock sensor.
311	Injector Driver #1 Open	Open wiring and/or connections to fuel injector #1 OR fuel injector #1 is faulty OR ECM is faulty.	Repair wiring and/or connections to fuel injector #1 OR replace fuel injector #1 OR replace the ECM.
312	Injector Driver #1 Shorted	Wiring and/or connections to fuel injector #1 shorted OR fuel injector #1 is faulty OR ECM is faulty.	Repair wiring and/or connections to fuel injector #1 OR replace fuel injector #1 OR replace the ECM.
313	Injector Driver #2 Open	Open wiring and/or connections to fuel injector #2 OR fuel injector #2 is faulty OR ECM is faulty.	Repair wiring and/or connections to fuel injector #2 OR replace fuel injector #2 OR replace the ECM.
314	Injector Driver #2 Shorted	Wiring and/or connections to fuel injector #2 shorted OR fuel injector #2 is faulty OR ECM is faulty.	Repair wiring and/or connections to fuel injector #2 OR replace fuel injector #2 OR replace the ECM.
315	Injector Driver #3 Open	Open wiring and/or connections to fuel injector #3 OR fuel injector #3 is faulty OR ECM is faulty.	Repair wiring and/or connections to fuel injector #3 OR replace fuel injector #3 OR replace the ECM.
316	Injector Driver #3 Shorted	Wiring and/or connections to fuel injector #3 shorted OR fuel injector #3 is faulty OR ECM is faulty.	Repair wiring and/or connections to fuel injector #3 OR replace fuel injector #3 OR replace the ECM.
321	Injector Driver #4 Open	Open wiring and/or connections to fuel injector #4 OR fuel injector #4 is faulty OR ECM is faulty.	Repair wiring and/or connections to fuel injector #4 OR replace fuel injector #4 OR replace the ECM.
322	Injector Driver #4 Shorted	Wiring and/or connections to fuel injector #4 shorted OR fuel injector #4 is faulty OR ECM is faulty.	Repair wiring and/or connections to fuel injector #4 OR replace fuel injector #4 OR replace the ECM.
351	Fuel Pump Loop Open or High Side Short To Ground	Open wiring and/or connections to fuel pump OR fuel pump power shorted to ground OR fuel pump is faulty.	Repair wiring and/or connections to fuel pump OR replace fuel pump.
352	Fuel Pump High Side Shorted To Power	Wiring and/or connections to fuel pump shorted to power OR fuel pump is faulty.	Repair wiring and/or connections to fuel pump OR replace fuel pump.
353	MegaJector delivery pressure higher than expected	Fuel pressure too high OR LPG lockoff not sealing correctly OR the line between the MegaJector and carburetor is kinked or restricted or is leaking OR engine cooling system is not operating properly OR MegaJector is faulty.	Check fuel pressure OR repair LPG lockoff OR repair the line between the MegaJector and carburetor OR repair engine cooling system OR replace MegaJector.
354	Megajector delivery pressure lower than expected	Fuel pressure too low OR LPG lockoff not opening completely OR the line between the MegaJector and carburetor is kinked or restricted or is leaking OR engine cooling system is not operating properly OR MegaJector is faulty.	Check fuel pressure OR repair LPG lockoff OR repair the line between the MegaJector and carburetor OR repair engine cooling system OR replace the MegaJector.
355	MegaJector communication lost	The ECM doesn't get any response from the MegaJector, or an incorrect response for 500ms period or longer.	Check CAN circuits for continuity and shorts to power or ground and for continuity and repair as necessary OR replace the MegaJector.
361	MegaJector voltage supply high	The MegaJector detects voltage greater than 18 volts for 5 seconds anytime the engine is cranking or running.	Repair charging system OR replace the MegaJector.
362	MegaJector voltage supply low	The MegaJector detects voltage less than 9.5 volts for 5 seconds anytime the engine is cranking or running.	Repair VBAT power or ground circuit to ECM and MegaJector OR replace battery OR repair charging system OR replace the MegaJector.

REV A

FORD ENGINE ECM FAULT CODE CHART
(AFTER SERIAL NUMBER GS9003-41368)

Code	Problem	Cause	Solution
363	Megajector internal actuator fault detection	The MegaJector detects an internal fault. Open or short in power, ground or CAN circuits.s	Check Power, Ground and CAN circuits at MegaJector and all connections and repair as necessary OR MegaJector has an internal fault. Contact Ford Power Products for assistance.
364	Megajector internal circuitry fault detection	The MegaJector detects an internal circuitry failure. Open or short in power, ground or CAN circuits.	Check Power, Ground and CAN circuits at MegaJector and all connections and repair as necessary OR MegaJector has an internal fault. Contact Ford Power Products for assistance.
365	MegaJector internal communication fault detection	The MegaJector detects an internal communications failure. Open or short in power, ground or CAN circuits.	Check Power, Ground and CAN circuits at MegaJector and all connections and repair as necessary OR MegaJector has an internal fault. Contact Ford Power Products for assistance.
411	Coil Driver #1 Open	Open wiring and/or connections to ignition coil #1 OR ignition coil #1 is faulty.	Repair wiring and/or connections to ignition coil #1 OR replace ignition coil #1.
412	Coil Driver #1 Shorted	Wiring and/or connections to ignition coil #1 shorted OR ignition coil #1 is faulty.	Repair wiring and/or connections to ignition coil #1 OR replace ignition coil #1.
413	Coil Driver #2 Open	Open wiring and/or connections to ignition coil #2 OR ignition coil #2 is faulty.	Repair wiring and/or connections to ignition coil #1 OR replace ignition coil #1.
414	Coil Driver #2 Shorted	Wiring and/or connections to ignition coil #2 shorted OR ignition coil #2 is faulty.	Repair wiring and/or connections to ignition coil #2 OR replace ignition coil #2.
511	FPP1 High Voltage	Not used.	If this fault appears on your machine, contact Genie Industries Service Department.
512	FPP1 Low Voltage	Not used.	If this fault appears on your machine, contact Genie Industries Service Department.
513	FPP1 Higher than IVS Limit	Not used.	If this fault appears on your machine, contact Genie Industries Service Department.
514	FPP1 Lower than IVS Limit	Not used.	If this fault appears on your machine, contact Genie Industries Service Department.
521	FPP2 High Voltage	Not used.	If this fault appears on your machine, contact Genie Industries Service Department.
522	FPP2 Low Voltage	Not used.	If this fault appears on your machine, contact Genie Industries Service Department.
531	TPS1 (Signal Voltage) High	The #1 throttle position sensor wiring and/or connections open or shorted OR there is a poor system ground connection OR throttle position sensor #1 is faulty.	Be sure system ground connections are in place and secure OR repair wiring and/or connections to sensor OR replace throttle position sensor #1.
532	TPS1 (Signal Voltage) Low	The #1 throttle position sensor wiring and/or connections open or shorted OR there is a poor system ground connection OR throttle position sensor #1 is faulty.	Be sure system ground connections are in place and secure OR repair wiring and/or connections to sensor OR replace throttle position sensor #1.
533	TPS2 (Signal Voltage) High	The #2 throttle position sensor wiring and/or connections open or shorted OR there is a poor system ground connection OR throttle position sensor #2 is faulty.	Be sure system ground connections are in place and secure OR repair wiring and/or connections to sensor OR replace throttle position sensor #2.
534	TPS2 (Signal Voltage) Low	The #2 throttle position sensor wiring and/or connections open or shorted OR there is a poor system ground connection OR throttle position sensor #2 is faulty.	Be sure system ground connections are in place and secure OR repair wiring and/or connections to sensor OR replace throttle position sensor #2.
535	TPS1 Higher than TPS2	The throttle position sensor wiring and/or connections for either TPS1 or TPS2 open or shorted OR there is a poor system ground connection OR one or both throttle position sensors are faulty.	Be sure engine harness wiring and connections are in place and secure OR repair wiring and/or connections to one or both TPS sensors OR replace one or both TPS sensors.

Continued on next page

FORD ENGINE ECM FAULT CODE CHART REV A
(AFTER SERIAL NUMBER GS9003-41368)

Code	Problem	Cause	Solution
536	TPS1 Lower than TPS2	The throttle position sensor wiring and/or connections for either TPS1 or TPS2 open or shorted OR there is a poor system ground connection OR one or both throttle position sensors are faulty.	Be sure engine harness wiring and connections are in place and secure OR repair wiring and/or connections to one or both TPS sensors OR replace one or both TPS sensors.
537	Throttle Unable to Open	Governor actuator is stuck closed OR wiring and/or connections open or shorted OR governor actuator is faulty.	Repair wiring and/or connections to governor actuator OR replace the governor actuator.
538	Throttle Unable to Close	Governor actuator is stuck open OR wiring and/or connections open or shorted OR governor actuator is faulty.	Repair wiring and/or connections to governor actuator OR replace the governor actuator.
545	Governor Interlock Failure	Engine harness wiring and/or connections open or shorted OR there is a poor system ground connection OR ECM is faulty.	Repair wiring and/or connections in engine harness OR replace the ECM.
551	Max Governor Speed Override	ECM needs to be re-programmed OR throttle is sticking open OR there are air leaks between the throttle body and cylinder head.	Re-program ECM OR repair binding throttle operation OR repair any air leaks between the throttle body and cylinder head.
552	Fuel Rev Limit	ECM needs to be re-programmed OR throttle is sticking open OR there are air leaks between the throttle body and cylinder head.	Re-program ECM OR repair binding throttle operation OR repair any air leaks between the throttle body and cylinder head.
553	Spark Rev Limit	ECM needs to be re-programmed OR throttle is sticking open OR there are air leaks between the throttle body and cylinder head.	Re-program ECM OR repair binding throttle operation OR repair any air leaks between the throttle body and cylinder head.
611	COP Failure	Loose wire connections to ECM OR ECM is faulty.	Locate and repair any engine harness wiring damage or shorts to ECM to be sure they are secure OR replace ECM.
612	Invalid Interrupt	Loose wire connections to ECM OR ECM is faulty.	Locate and repair any engine harness wiring damage or shorts to ECM to be sure they are secure OR replace ECM.
613	A/D Loss	Loose wire connections to ECM OR ECM is faulty.	Locate and repair any engine harness wiring damage or shorts to ECM to be sure they are secure OR replace ECM.
614	RTI 1 Loss	Loose wire connections to ECM OR ECM is faulty.	Locate and repair any engine harness wiring damage or shorts to ECM to be sure they are secure OR replace ECM.
615	Flash Checksum Invalid	Loose wire connections to ECM OR ECM is faulty.	Locate and repair any engine harness wiring damage or shorts to ECM to be sure they are secure OR replace ECM.
616	RAM Failure	Loose wire connections to ECM OR ECM is faulty.	Locate and repair any engine harness wiring damage or shorts to ECM to be sure they are secure OR replace ECM.
631	External 5V DC Ref Lower than Expected	Engine harness wiring and/or connections open or shorted to ground OR there is a faulty engine sensor OR ECM is faulty.	Locate and repair any engine harness wiring damage or shorts OR locate and troubleshoot or repair faulty engine sensor OR replace ECM.
632	External 5V DC Ref Higher than Expected	Engine harness wiring and/or connections open or shorted to ground OR there is a faulty engine sensor OR ECM is faulty.	Locate and repair any engine harness wiring damage or shorts OR locate and troubleshoot or repair faulty engine sensor OR replace ECM.
655	RTI 2 Loss	Loose wire connections to ECM OR ECM is faulty.	Locate and repair any engine harness wiring damage or shorts to ECM to be sure they are secure OR replace ECM.
656	RTI 3 Loss	Loose wire connections to ECM OR ECM is faulty.	Locate and repair any engine harness wiring damage or shorts to ECM to be sure they are secure OR replace ECM.

Schematics

Observe and Obey:

- ☑ Troubleshooting and repair procedures shall be completed by a person trained and qualified on the repair of this machine.
- ☑ Immediately tag and remove from service a damaged or malfunctioning machine.
- ☑ Repair any machine damage or malfunction before operating the machine.

Before Troubleshooting:

- ☑ Read, understand and obey the safety rules and operating instructions in the appropriate operator's manual on your machine.
- ☑ Be sure that all necessary tools and test equipment are available and ready for use.

About This Section

There are two groups of schematics in this section. An illustration legend precedes each group of drawings.

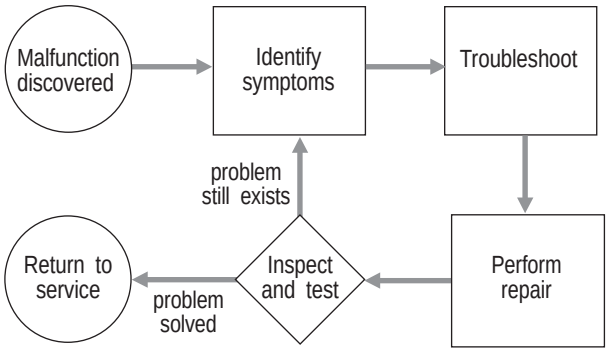
Electrical Schematics

⚠WARNING Electrocution hazard. Contact with electrically charged circuits could result in death or serious injury. Remove all rings, watches and other jewelry.

Hydraulic Schematics

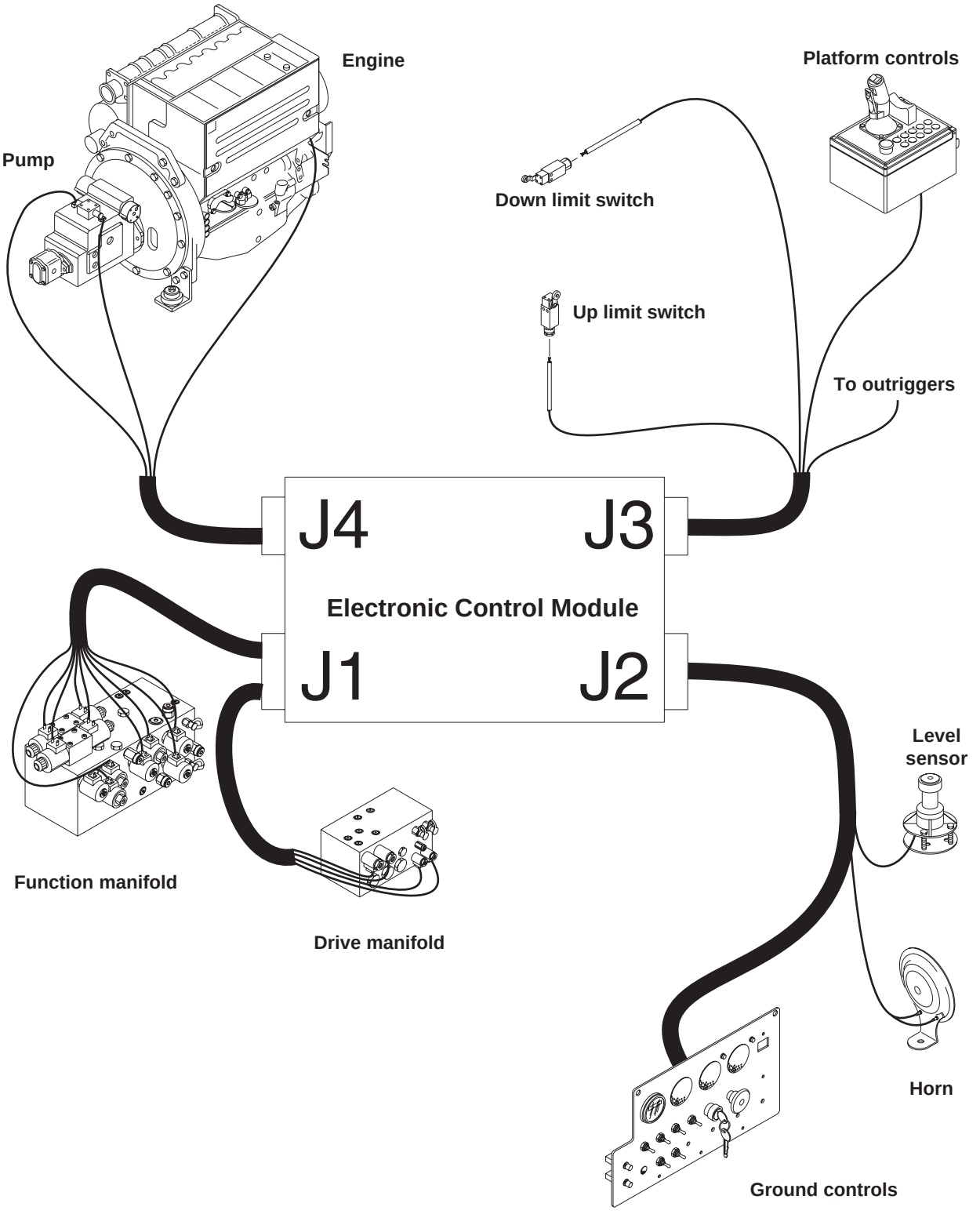
⚠WARNING Bodily injury hazard. Spraying hydraulic oil can penetrate and burn skin. Loosen hydraulic connections very slowly to allow the oil pressure to dissipate gradually. Do not allow oil to squirt or spray.

General Repair Process



Electronic Control Module Layout

(before serial number GS9003-41523) REV A



Electronic Control Module Pin-Out Legend

REV A (before serial number GS9003-41523)

J1 Connector (36 pin)

Pin	Description
A1	Right turn coil Y3
A2	Left turn coil Y4
A3	Up coil Y8
A4	Brake coil Y2
A5	Plug
A6	Plug
A7	Plug
A8	Plug
A9	Down coil Y7
A10	2 speed coil Y1
A11	High speed bypass coil Y49
A12	Left front outrigger coil Y35
B1	Flashing beacon
B2	Auxiliary power unit
B3	Forward/reverse relay CR58 terminal 30
B4	Proportional coil (+) Y9
B5	Right front outrigger coil Y36
B6	Outrigger extend coil Y40
B7	Outrigger retract coil Y39
B8	Plug
B9	Plug
B10	Plug
B11	Plug
B12	Plug
C1	Power to terminal 30 on relays CR1, CR5 and CR8
C2	Power to terminal 30 on relays CR1, CR5 and CR8
C3	Power to terminal 30 on relays CR1, CR5 and CR8
C4	Power to terminal 30 on relays CR1, CR5 ands CR8
C5	Plug
C6	Plug
C7	Ground strip
C8	Proportional coil (-) Y9
C9	Plug
C10	Plug
C11	Emergency Stop relay CR41 terminal 87
C12	Plug

J2 Connector (36 pin)

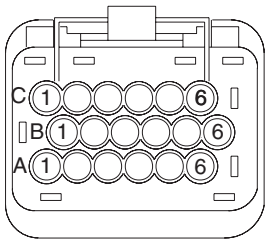
Pin	Description
A1	Start toggle switch TS52
A2	Platform up/down toggle switch TS66
A3	Plug
A4	Plug
A5	Key switch KS1
A6	Level sensor S7 (white)
A7	Platform up/down toggle switch TS66
A8	Front left outrigger limit switch LS12
A9	Plug
A10	Front right outrigger limit switch LS13
A11	Plug
A12	Plug
B1	Level sensor S8 (blue)
B2	Plug
B3	Level sensor S8 (yellow)
B4	Plug
B5	Plug
B6	Plug
B7	Plug
B8	Plug
B9	Forward/reverse relay CR58 terminal86
B10	Level sensor (red)
B11	Horn relay CR5 terminal 86
B12	Alarm H5
C1	Diagnostic display G8
C2	Diagnostic display G8
C3	Diagnostic display G8
C4	Diagnostic display G8
C5	Diagnostic display G8
C6	Diagnostic display G8
C7	Diagnostic display G8
C8	Diagnostic display G8
C9	Diagnostic display G8
C10	Diagnostic display G8
C11	Plug
C12	Plug

J3 Connector (18 pin)

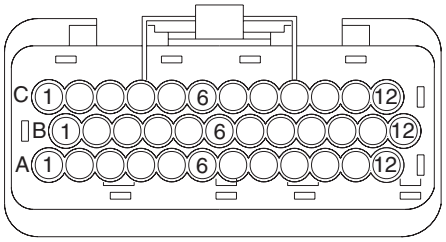
Pin	Description
A1	Up limit switch LS5
A2	Down limit switch LS6
A3	Plug
A4	Platform controls(data +)
A5	Platform controls (data -)
A6	Left rear outrigger limit switch LS14
B1	Plug
B2	Plug
B3	Plug
B4	Platform controls (ground)
B5	Right rear outrigger limit switch LS15
B6	Left rear outrigger coil Y33
C1	Plug
C2	Plug
C3	Plug
C4	Plug
C5	Plug
C6	Plug

J4 Connector (18 pin)

Pin	Description
A1	Fuel select toggle switch TS53
A2	Plug
A3	Plug
A4	High idle toggle switch TS54
A5	Alternator
A6	Plug
B1	Water/oil temperature sender
B2	Oil pressure sender
B3	Platform overload S5
B4	High idle solenoid U30
B5	Start relay CR1 terminal 86
B6	Generator coil Y29
C1	LPG coil Y50
C2	Right rear outrigger coil Y34
C3	Plug
C4	Ignition relay CR8 terminal 86
C5	Plug
C6	Plug



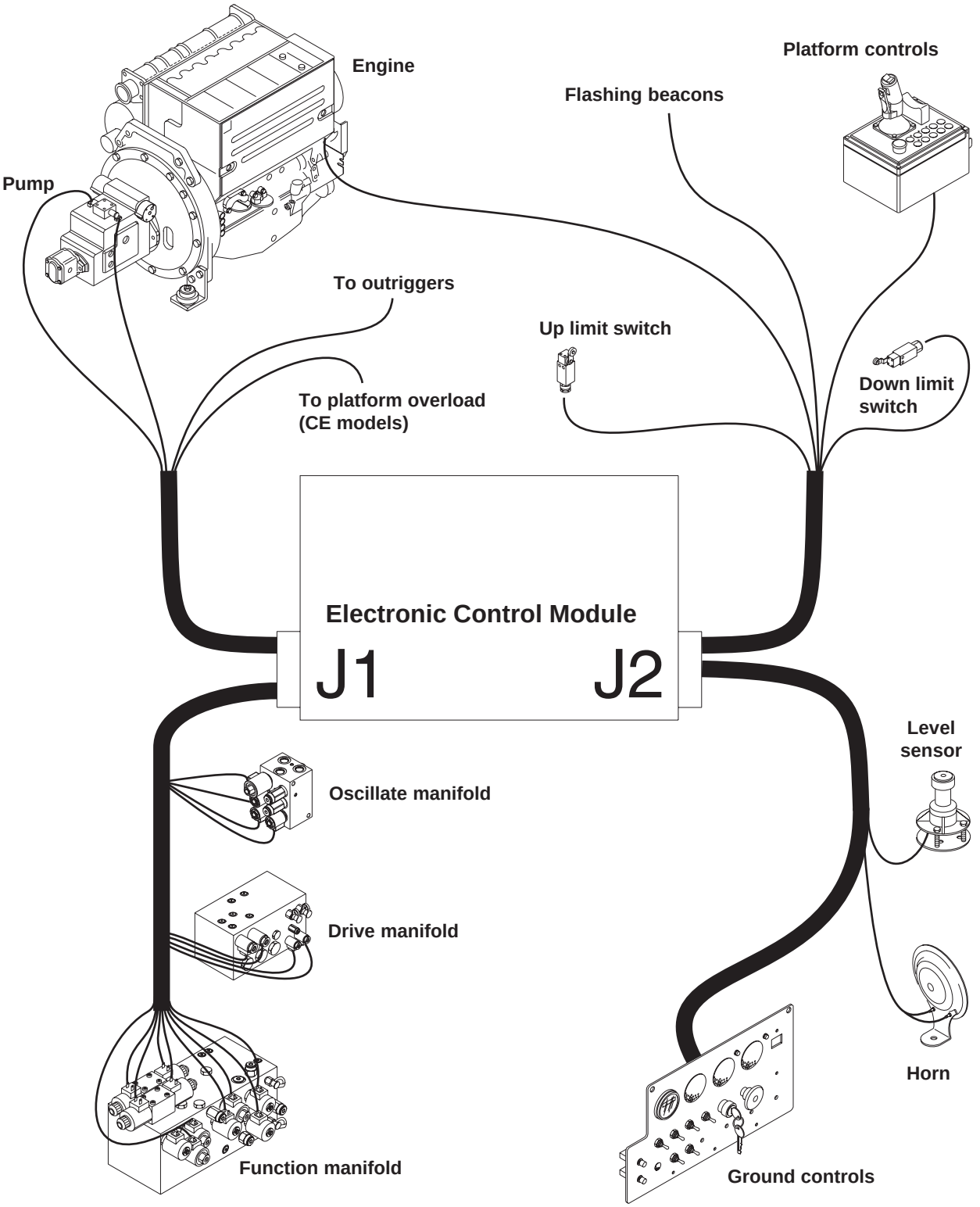
18 pin connector (J3 and J4)



36 pin connector (J1 and J2)

Electronic Control Module Layout

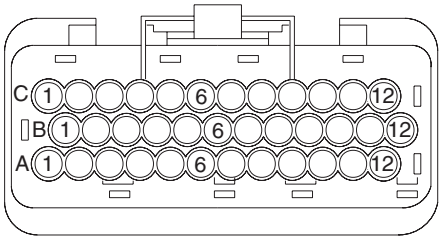
(after serial number GS9003-41522) REV A



Electronic Control Module Pin-Out Legend

REV A (after serial number GS9003-41522)

J1 Connector (36 pin)	
Pin	**Description**
A1	Right turn coil Y3 (output)
A2	Left turn coil Y4 (output)
A3	Up coil Y8 (output)
A4	Brake coil Y2 (output)
A5	Plug
A6	Plug
A7	Plug
A8	Plug
A9	Down coil Y7 (output)
A10	2 speed coil Y1 (output)
A11	Flow control bypass Y49 (GS90) OR drive coil Y1A (GS68) (output)
A12	Flow control bypass Y49A (GS90) OR drive coil Y1B (GS68) (output)
B1	Generator coil Y29 (output)
B2	Reverse coil/EDC Y51 (output)
B3	Forward coil/EDC Y51 (output)
B4	Proportional coil (+) Y9 (output)
B5	Right front outrigger coil Y36 (output)
B6	Outrigger extend coil Y40 (output)
B7	Outrigger retract coil Y39 (output)
B8	Plug
B9	Left front outrigger coil Y35 (output)
B10	Left rear outrigger coil Y33 (output)
B11	Right rear outrigger coil Y34 (output)
B12	LPG select (all) OR diesel shut off coil (GS68) (output)
C1	Plug
C2	Platform overload (input)
C3	Right front outrigger limit switch LS13 (input)
C4	Right rear outrigger limit switch LS15 (input)
C5	Left front outrigger limit switch LS12 (input)
C6	Left rear outrigger limit switch LS14 (input)
C7	Alternator (input)
C8	Engine oil pressure SW2 (input)
C9	Engine water temp SW1 OR oil temp SW3 (input)
C10	Plug
C11	Fuel coil (GS68)(output)
C12	Plug

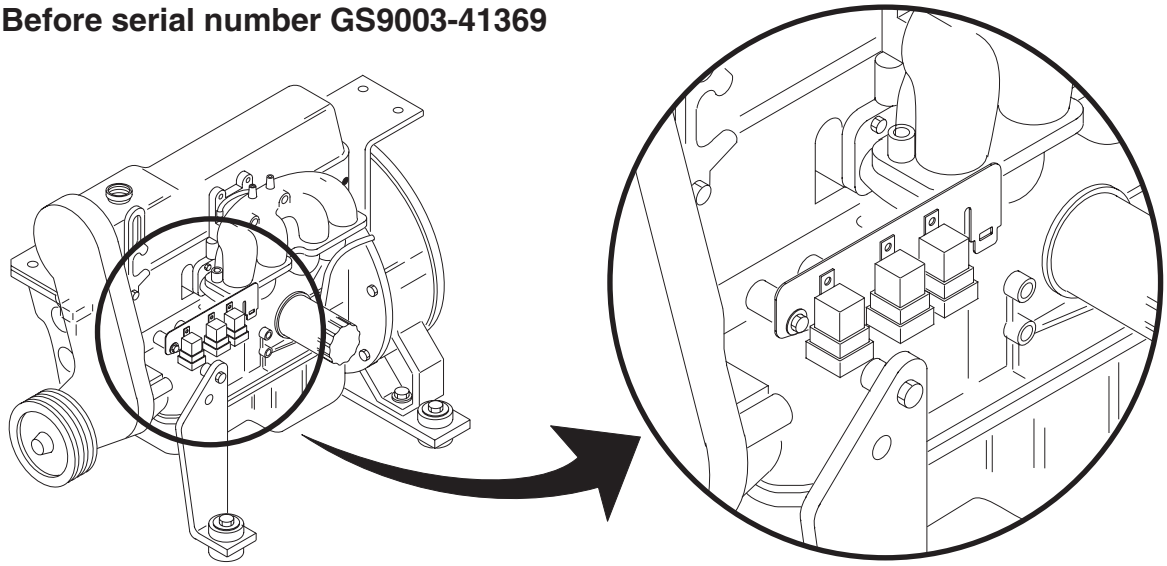


J2 Connector (36 pin)	
Pin	**Description**
A1	Up limit switch LS5 (input)
A2	Down limit switch LS6 (input)
A3	Aux down power (input)
A4	Aux down relay CR23 terminal 86 (output)
A5	Key switch terminal 3 (input)
A6	Level sensor S7 (white) (input)
A7	Plug
A8	Plug
A9	Plug
A10	Platform controls (ground) (input)
A11	Platform controls (data +) (input)
A12	Platform controls (data -) (input)
B1	Level sensor S8 (blue) (input)
B2	Level sensor S8 (black) (input)
B3	Level sensor S8 (yellow) (input)
B4	Plug
B5	Plug
B6	Plug
B7	Engine start relay CR1 terminal 86 (output)
B8	Ignition relay CR8 terminal 86 (output)
B9	Engine high idle (output)
B10	Level sensor S8 (red) (output)
B11	Horn relay CR5 terminal 86 (output)
B12	Alarm (output)
C1	System power (input)
C2	System power (input)
C3	System power (input)
C4	Engine starting aid (output)
C5	Oscillate stowed relay CR84 terminal 86 (output)
C6	Oscillate raised relay CR85 terminal 86 (output)
C7	Ground (output)
C8	Plug
C9	Plug
C10	Auxiliary down relay CR23 terminal 87 (output)
C11	Flashing beacons FS1 (output)
C12	ECM power (input)

Ford Engine Relay Layout

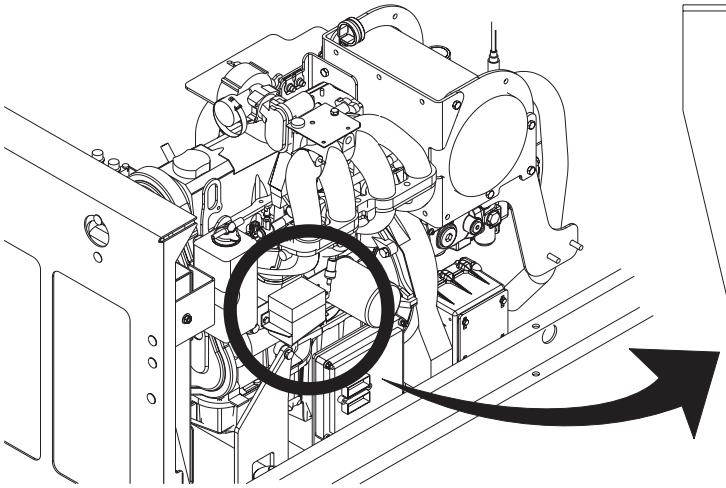
REV B

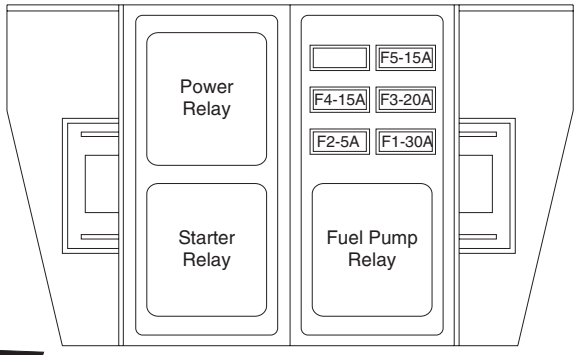
Before serial number GS9003-41369



Control Relays – Ford Models (before serial number GS9003-41369)					
CR-FA Power to Engine ECM Relay		**CR-FB Fuel Pump Relay**		**CR-FC Engine Starter Relay**	
Wire Color	**Terminal**	**Wire Color**	**Terminal**	**Wire Color**	**Terminal**
Brown/Light Green	85	Red	85	Red/Light Green	85
Black/White	86	Light Blue/Orange	86	Light Green/Purple	86
Yellow (12 Gauge)	30	Yellow	30	Red/Light Blue	30
Red (12 Gauge)	87	Pink/Black	87	Dark Blue	87A

After serial number GS9003-41368



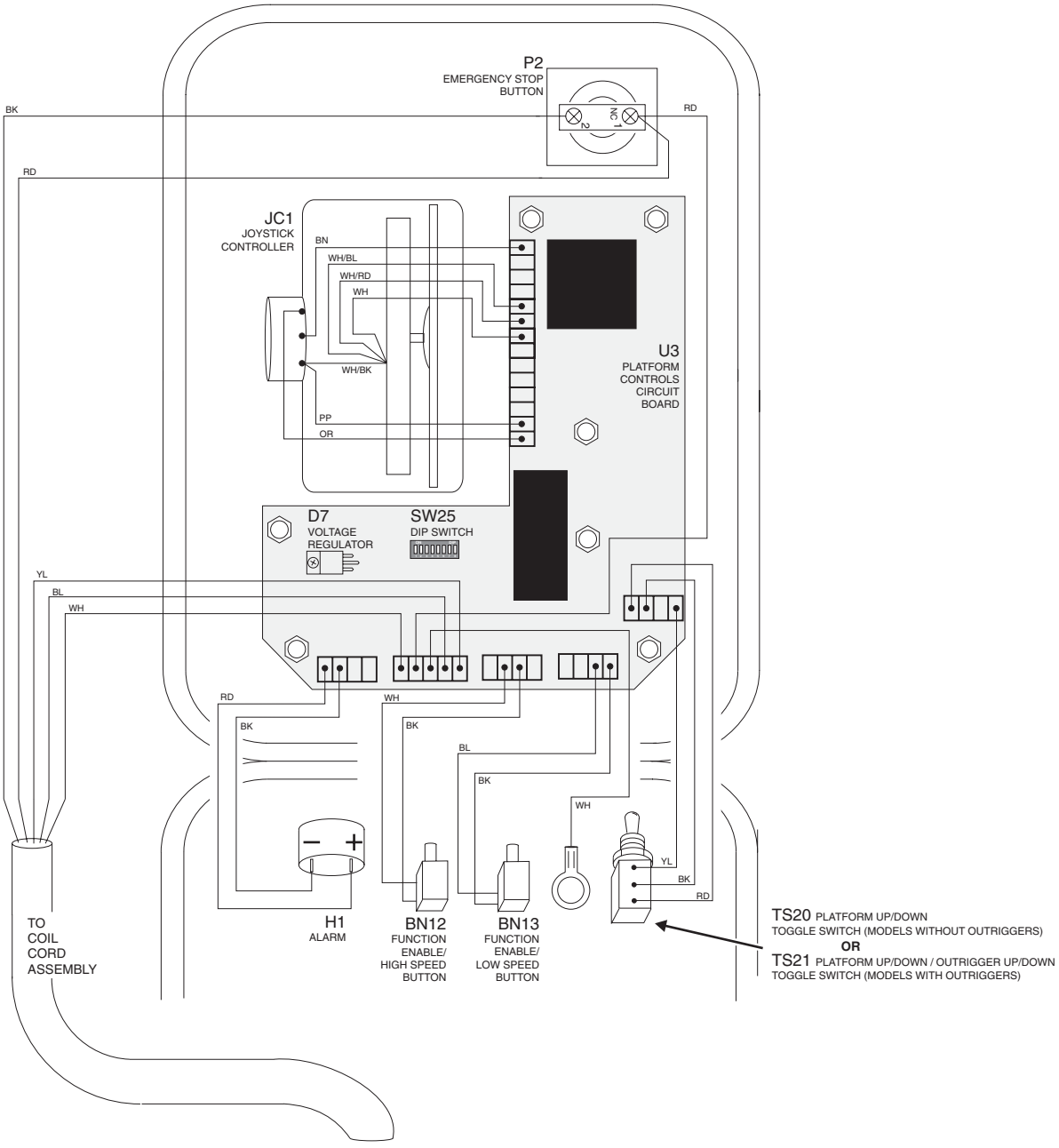


Note:
For detailed wire color information, refer to the Ford engine wiring harness diagrams.

Wiring Diagram - Platform Control Box

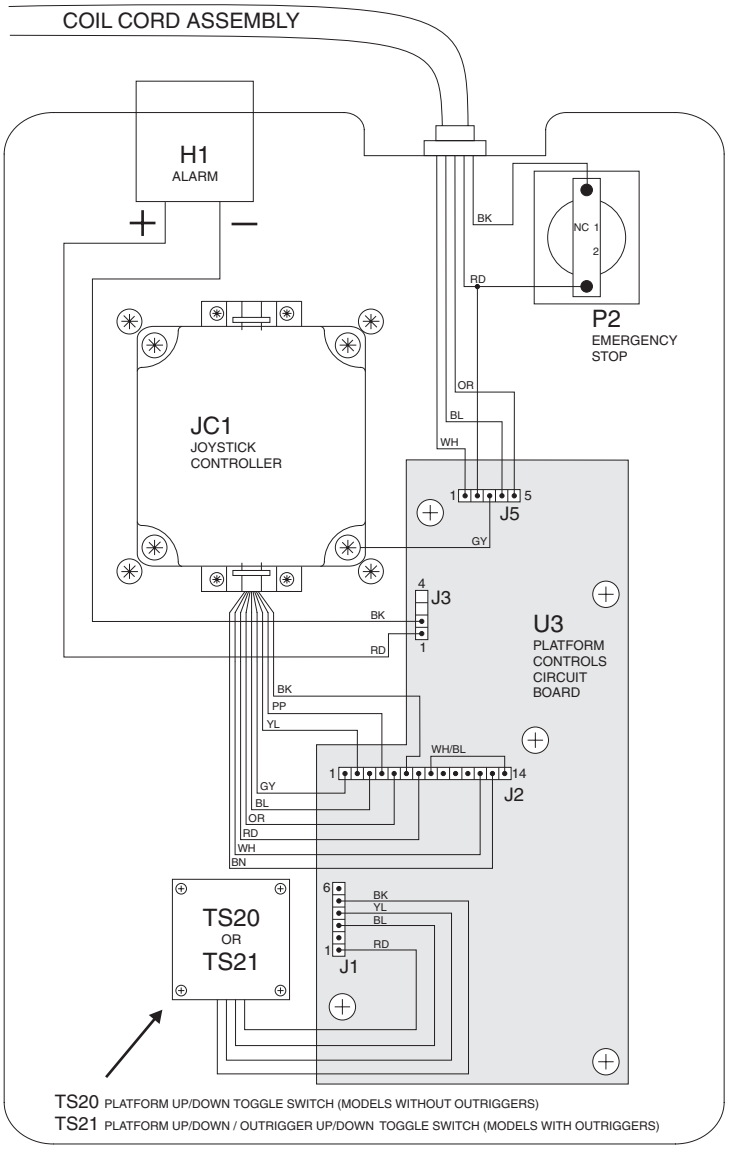
REV A

(before serial number GS9003-41523)



Wiring Diagram - Platform Control Box

(after serial number GS9003-41522) REV A



Electrical Schematics Abbreviation and Wire Color Legends

REV A

ABBREVIATION LEGEND	
Item	**Description**
B1	Battery
BN	Button
	BN1 = Engine stop
	BN2 = Engine start
	BN3 = Starting aid
	BN4 = High idle
	BN5 = Horn
	BN6 = High torque
	BN7 = Generator
	BN9 = Platform up
	BN12 = High speed lift enable
	BN13 = Low speed lift enable
	BN14 = LPG select
	BN15 = Horn/left rear outrigger
	BN16 = Outrigger function enable
	BN17 = High torque/left front outriggr
	BN18 = Generator/right front outriggr
	BN20 = Auto level
	BN23 = Auxiliary down
	BN24 = Right rear outrigger
	BN85 = Left front outrigger
	BN86 = Right front outrigger
	BN87 = Left rear outrigger
	BN91 = Auxiliary down enable
CB2	Circuit breaker
	CB2 = System power, 20A
	CB7 = Oil cooler, 20A
CR	Control relay
	CR1 = Engine start
	CR1A = Power to starter
	CR4 = High idle
	CR5 = Horn relay
	CR8 = Ignition
	CR15 = Starting aid
	CR17 = Oil cooler
	CR23 = Auxiliary down
	CR41 = Control system
	CR42 = Power
	CR58 = Forward/reverse
	CR84 = Oscillate stowed
	CR85 = Oscillate raised
D	Power supply
	D1 = Alternator
	D7 = Voltage regulator
FB1	Flashing beacons (option)
FL1	Fusible link, battery to alternator

ABBREVIATION LEGEND	
Item	**Description**
G	Gauge
	G1 = Volt meter
	G6 = Hour meter
	G8 = Diagnostic display
GND	Ground
H	Horn or alarm
	H1 = Alarm
	H2 = Automotive-style horn
	H5 = Alarm
JC1	Joystick controller
KS1	Key switch
L	LED or light
	L2 = Check engine light
	L19 = Power
	L21 = High torque
	L22 = LPG
	L23 = High idle
	L25 = Fault
	L27 = Generator
	L39 = Auxiliary power/lift disable
	L50 = System status
LS	Limit switch
	LS5 = Platform up (GS-5390 only)
	LS6 = Platform down
	LS12 = Left front outrigger
	LS13 = Right front outrigger
	LS14 = Left rear outrigger
	LS15 = Right rear outrigger
	LS22 = Right oscillate
	LS23 = Left oscillate
M	Motor or pump
	M1 = Cooling fan
	M2 = Auxiliary pump
	M3 = Starter motor
	M4 = Fuel pump
	M5 = Hydraulic power unit
N.C.	Normally closed
N.O.	Normally open
P	Power switch
	P1 = Emergency stop button (ground)
	P2 = Emergency stop button(platfrm)
Q	Solenoid
	Q3 = High idle
	Q8 = Fuel shut off
QD	Quick disconnect
	QD3 = Control cable to ground
	QD4 = Control cable to platform
R	Resistor
	R6 = 510 ? resistor
	R15 = 5K ohm potentiometer

ABBREVIATION LEGEND	
Item	**Description**
S	Sensor
	S5 = Platform overload pressure switch (option)
	S7 = Level sensor (models without outriggers)
	S8 = Level sensor (models with outriggers)
SW	Switch
	SW1 = Engine coolant temperature
	SW2 = Engine oil pressure
	SW3 = Engine oil temperature
	SW4 = Hydraulic oil temperature
	SW5 = Function enable
	SW6 = Steer left/right
	SW25 = DIP switch
TS	Toggle switch
	TS20 = Platform up/down
	TS21 = Platform, outrigger up/down
	TS52 = Engine start
	TS53 = Fuel select
	TS54 = Engine high idle
	TS56 = Starting aid
	TS66 = Platform up/down
	TS67 = Function enable
	TS69 = Auxiliary function enable
	TS70 = Auxiliary down
U	Electronic component
	U3 = Platform controls circuit board
	U5 = Electronic control module
	U32 = Glow plug (option)
Y	Valve coil
	Y1 = Parallel
	Y2 = Brake release
	Y3 = Steer right
	Y4 = Steer left
	Y7 = Platform down
	Y8 = Platform up
	Y9 = Proportional control
	Y29 = Generator on (option)
	Y33 = Left rear outrigger
	Y34 = Right rear outrigger
	Y35 = Left front outrigger
	Y36 = Right front outrigger
	Y39 = Outrigger retract
	Y40 = Outrigger extend
	Y49 = High speed bypass
	Y49A = High speed bypass
	Y50 = LPG
	Y51 = Electronic displacemnt control
	Y54 = Oscillate float
	Y55 = Oscillate enable
	Y56 = Left oscillate
	Y57 = Right oscillate

WIRE COLOR LEGEND	
Color	**Description**
BL	Blue
BK	Black
BN	Brown
GY	Grey
OR	Orange
PP	Purple
RD	Red
WH	White
YL	Yellow
WH/BL	White/Blue
WH/BK	White/Black
WH/RD	White/Red

WIRE COLOR LEGEND FORD WIRING HARNESS					
Color	**Description**	**Color**	**Description**	**Color**	**Description**
BL	BLUE	GY	GREY	P	PURPLE
BK	BLACK	LB	LIGHT BLUE	R	RED
BR	BROWN	LG	LIGHT GREEN	T	TAN
DB	DARK BLUE	N	NATURAL	W	WHITE
DG	DARK GREEN	O	ORANGE	Y	YELLOW
GN	GREEN	PK	PINK		

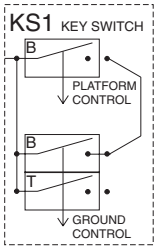
NOTES

1. Wires are labeled with Ford circuit number, color, and wire gauge. Example: 74GY/LB18 means circuit 74, grey wire with light blue stripe, 18 gauge wire

2. Internal splices are not shown.

Electrical Symbols Legend

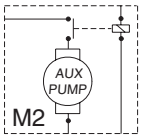
REV A



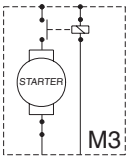
Key switch

Circuit breaker

Fuse or Fusible link



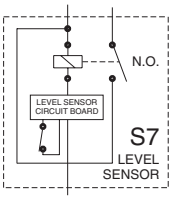
Auxiliary pump



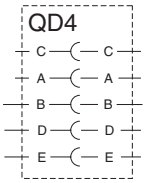
Engine starter

Hour meter

Emergency Stop button



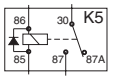
Level sensor
(models without outriggers)



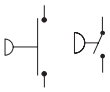
Quick disconnect

Horn

Flashing beacon

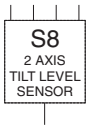


Relay



Pressure switch

Solenoid valve

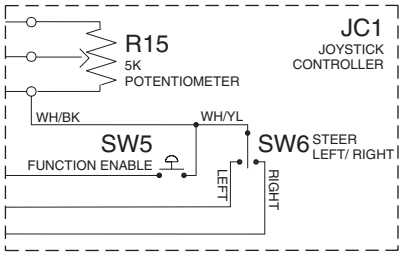


Level sensor
(models with outriggers)

Alternator

Temperature switch

LED

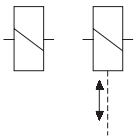


Spark plug

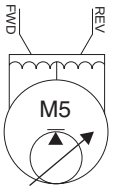
Resistor

Toggle switch

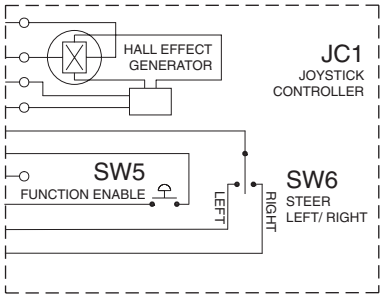
Diode



Solenoid

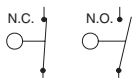


Drive pump EDC



Joystick

12V DC Battery

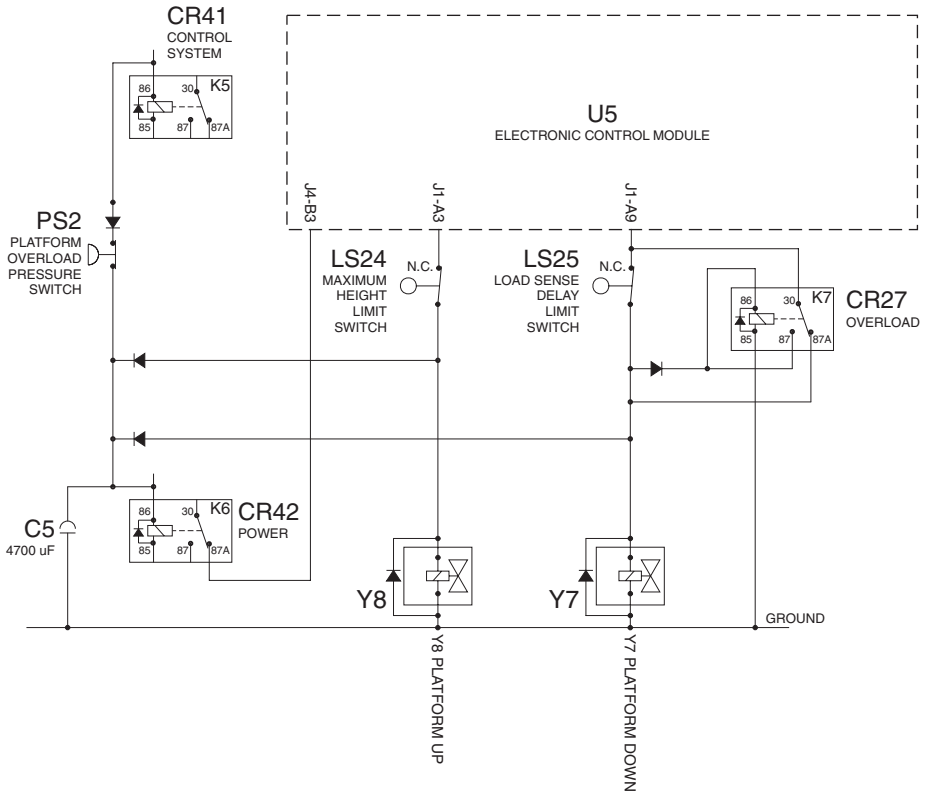


Limit switch

Electrical Schematic - Platform Overload (option)

REV A

(before serial number GS9003-41523)



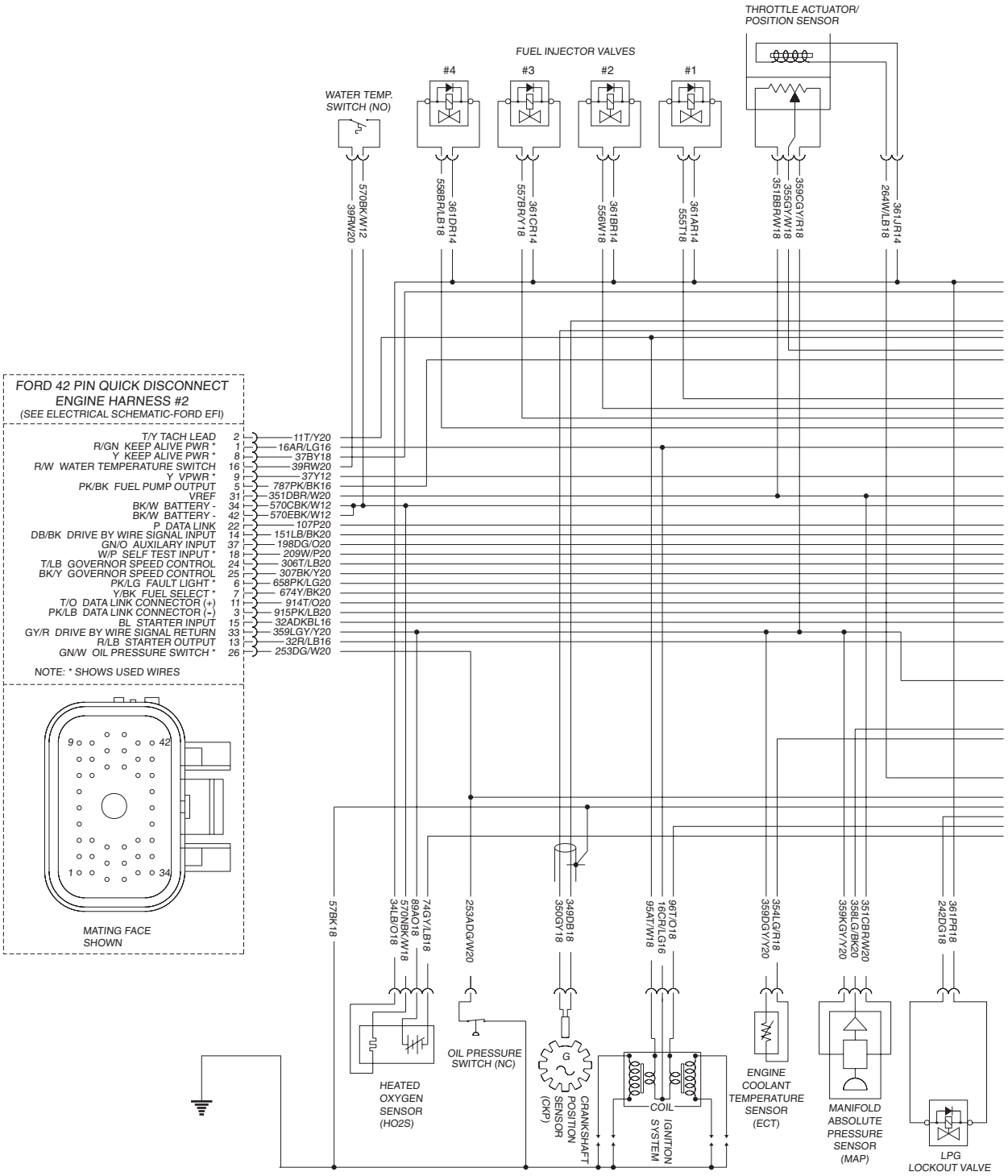
- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES7167B

Wiring Harness - Ford LRG-425 EFI

(before serial number GS9003-41369) REV B

Part 1 of 2

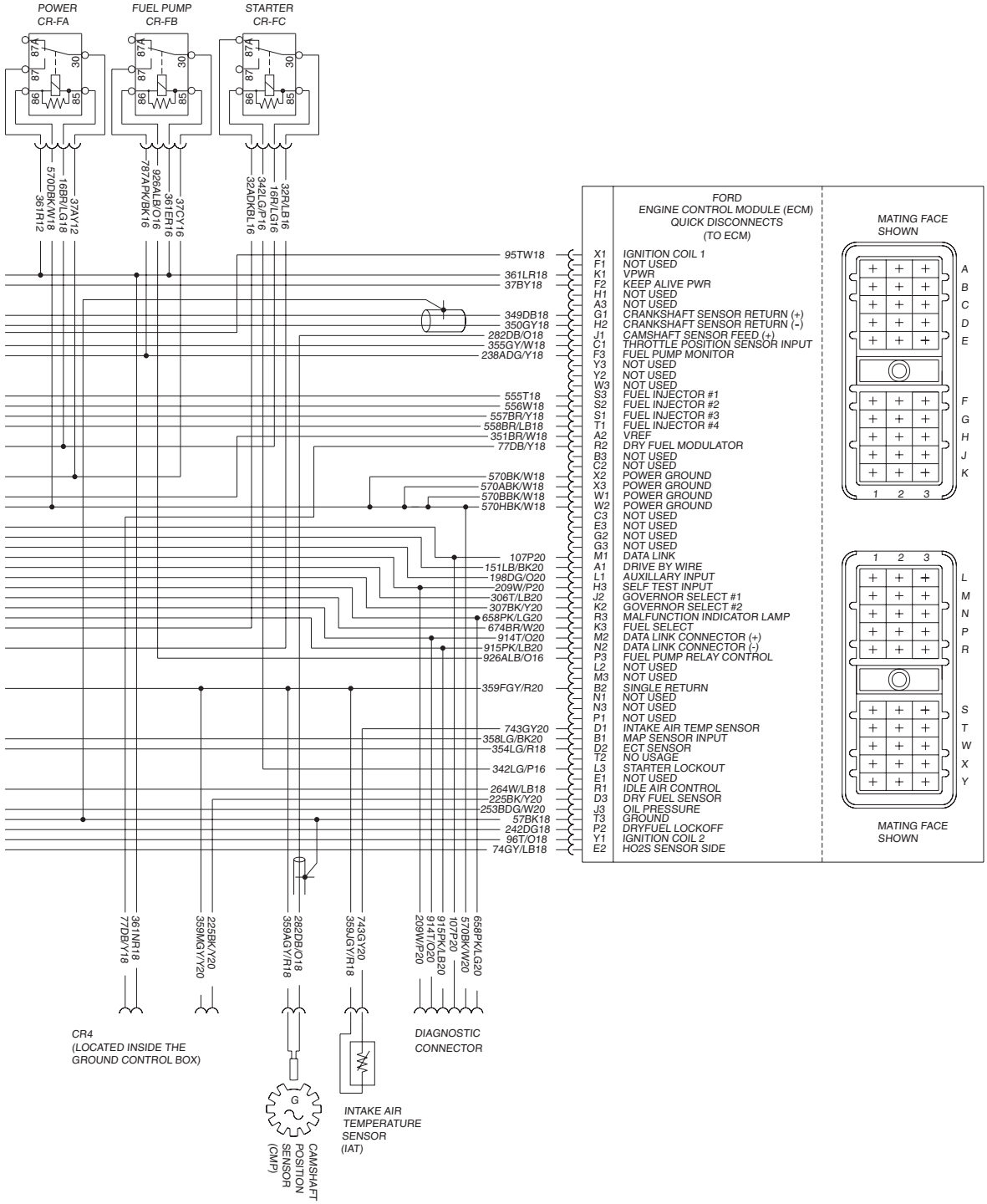


ES7144A

Wiring Harness - Ford LRG-425 EFI

REV B

(before serial number GS9003-41369)
Part 2 of 2

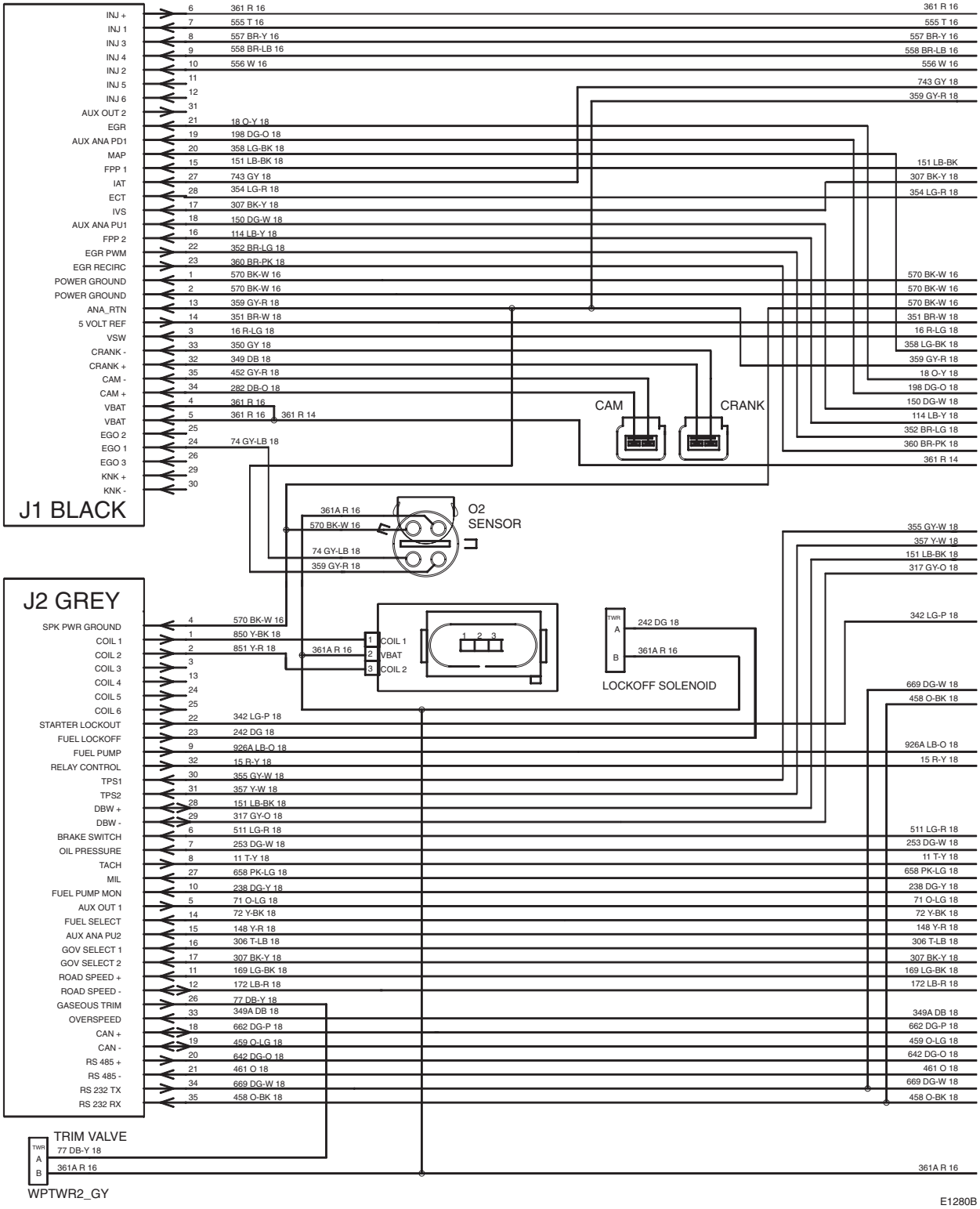


ES7144A

Wiring Harness - Ford LRG-425 EFI

(from serial number GS9003-41369 to GS9004-41693) REV A

Part 1 of 2

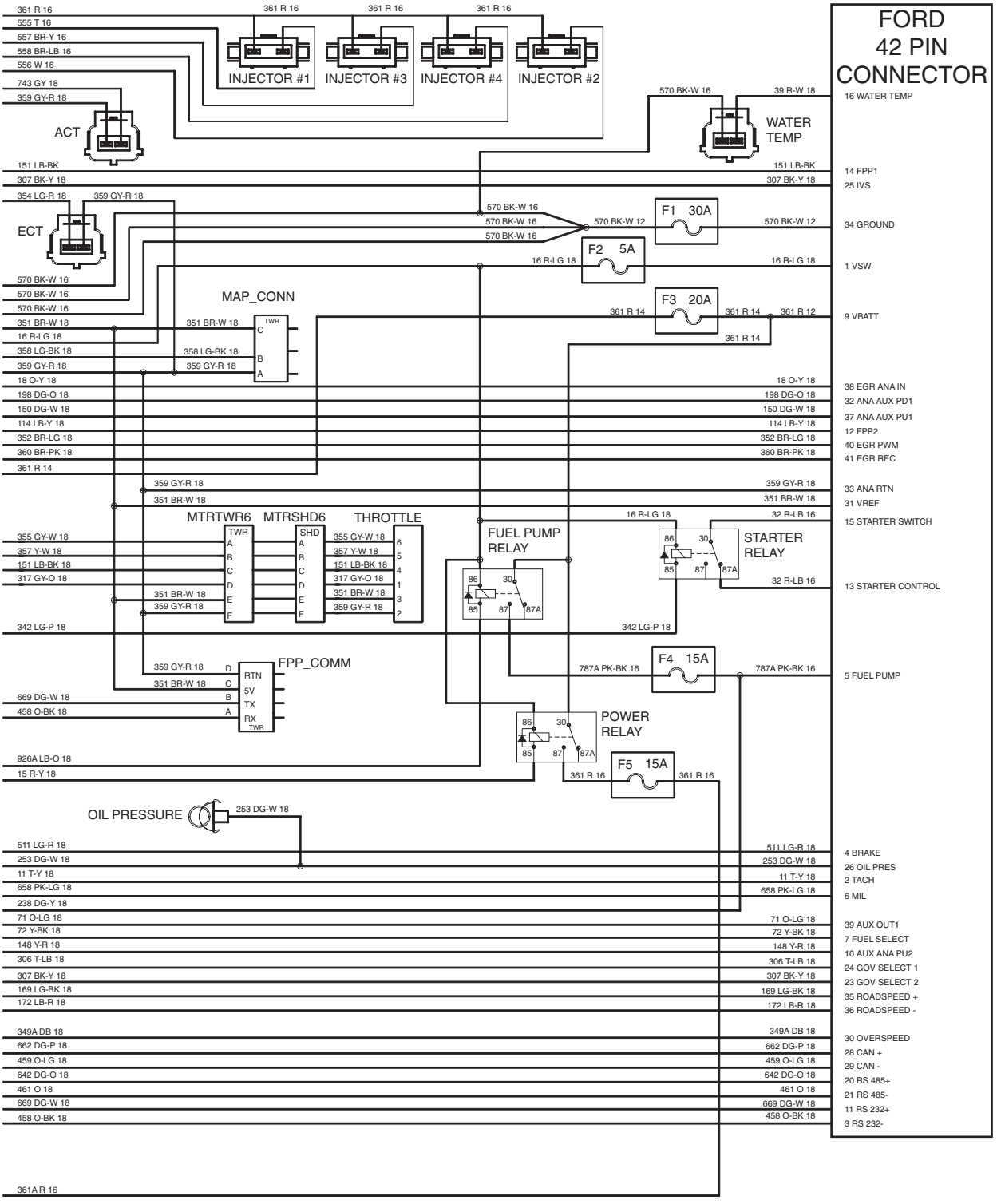


Wiring Harness - Ford LRG-425 EFI

REV A

(from serial number GS9003-41369 to GS9004-41693)

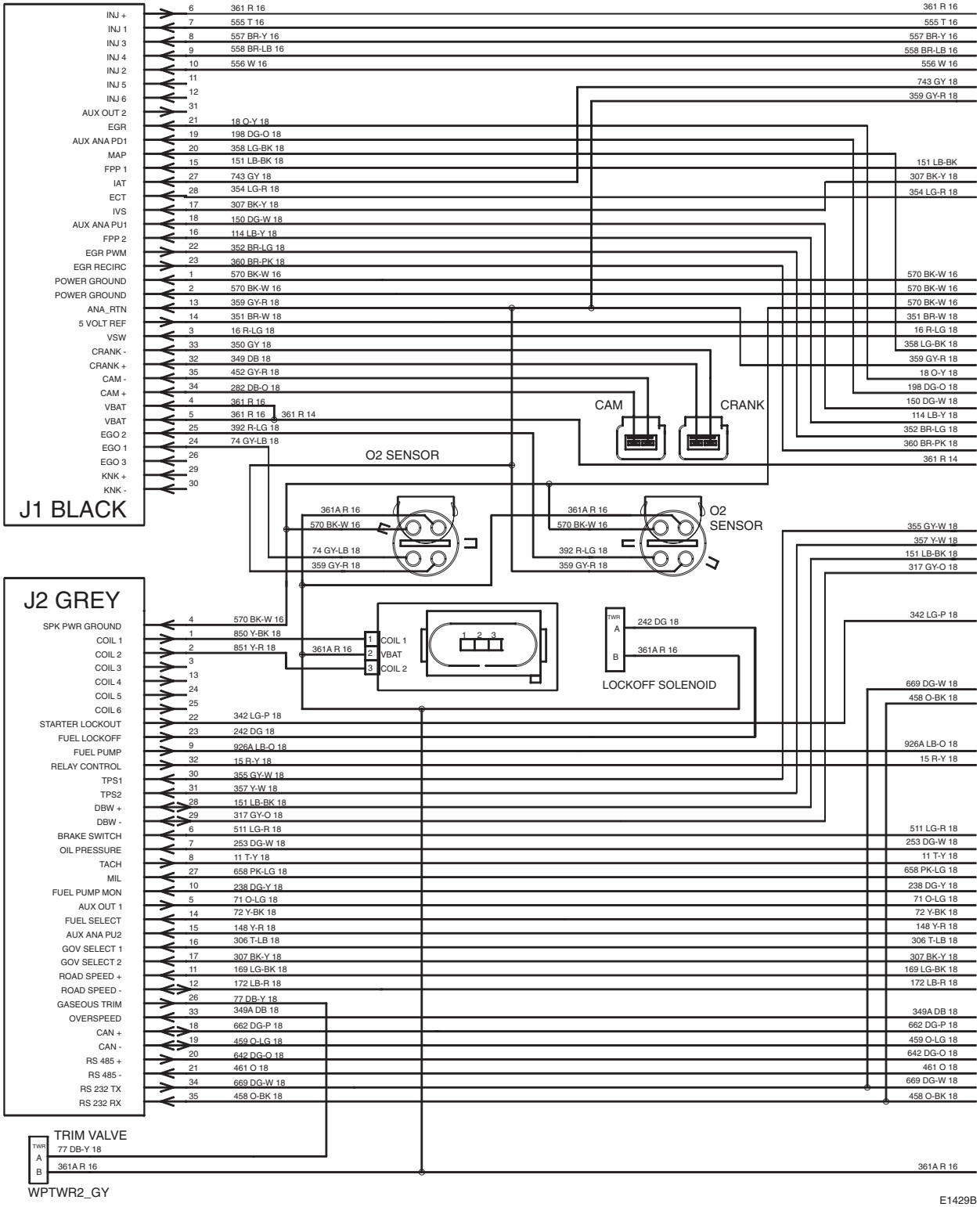
Part 2 of 2



Wiring Harness - Ford LRG-425 EFI

(after serial number GS9004-41693) REV A

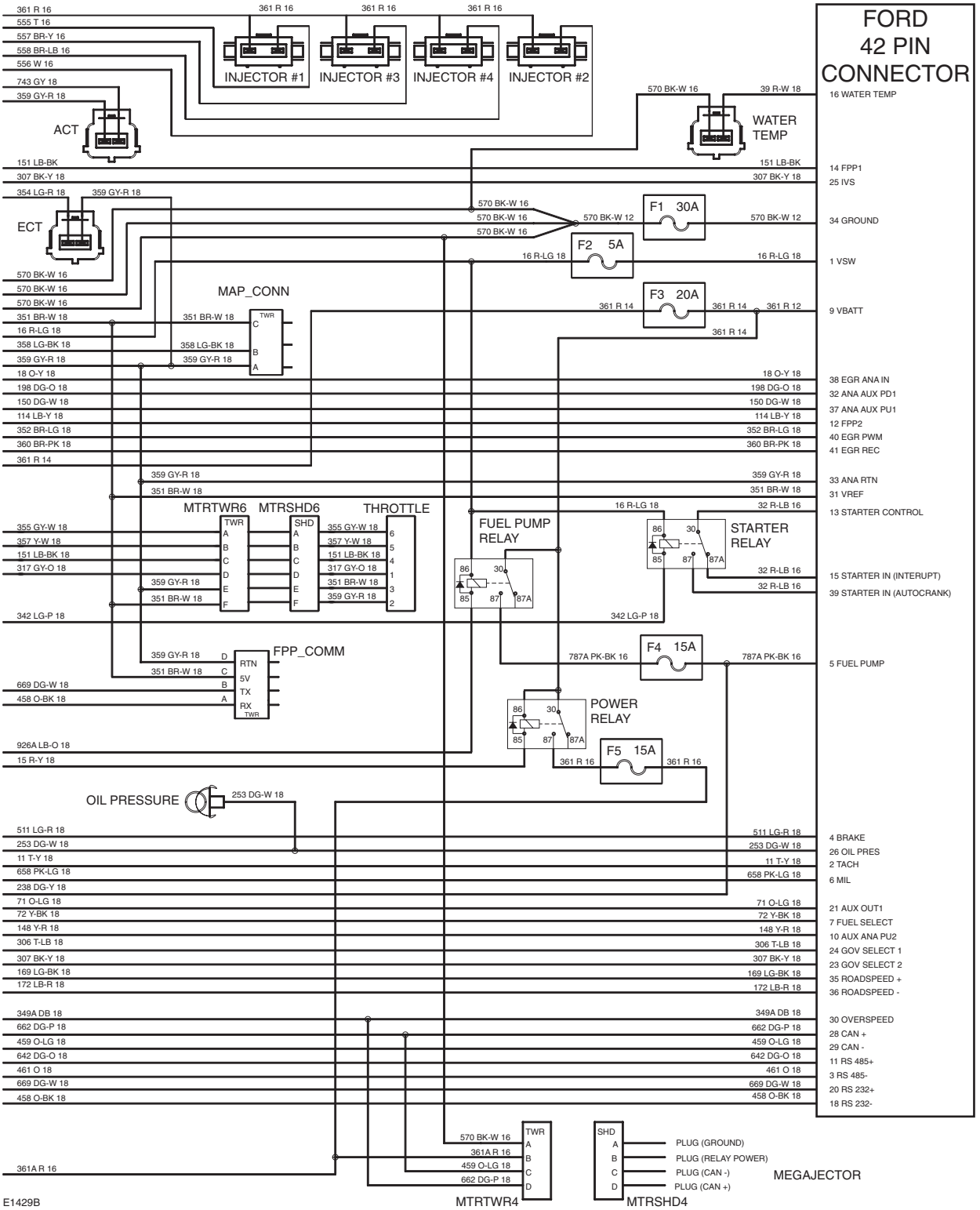
Part 1 of 2



Wiring Harness - Ford LRG-425 EFI

REV A

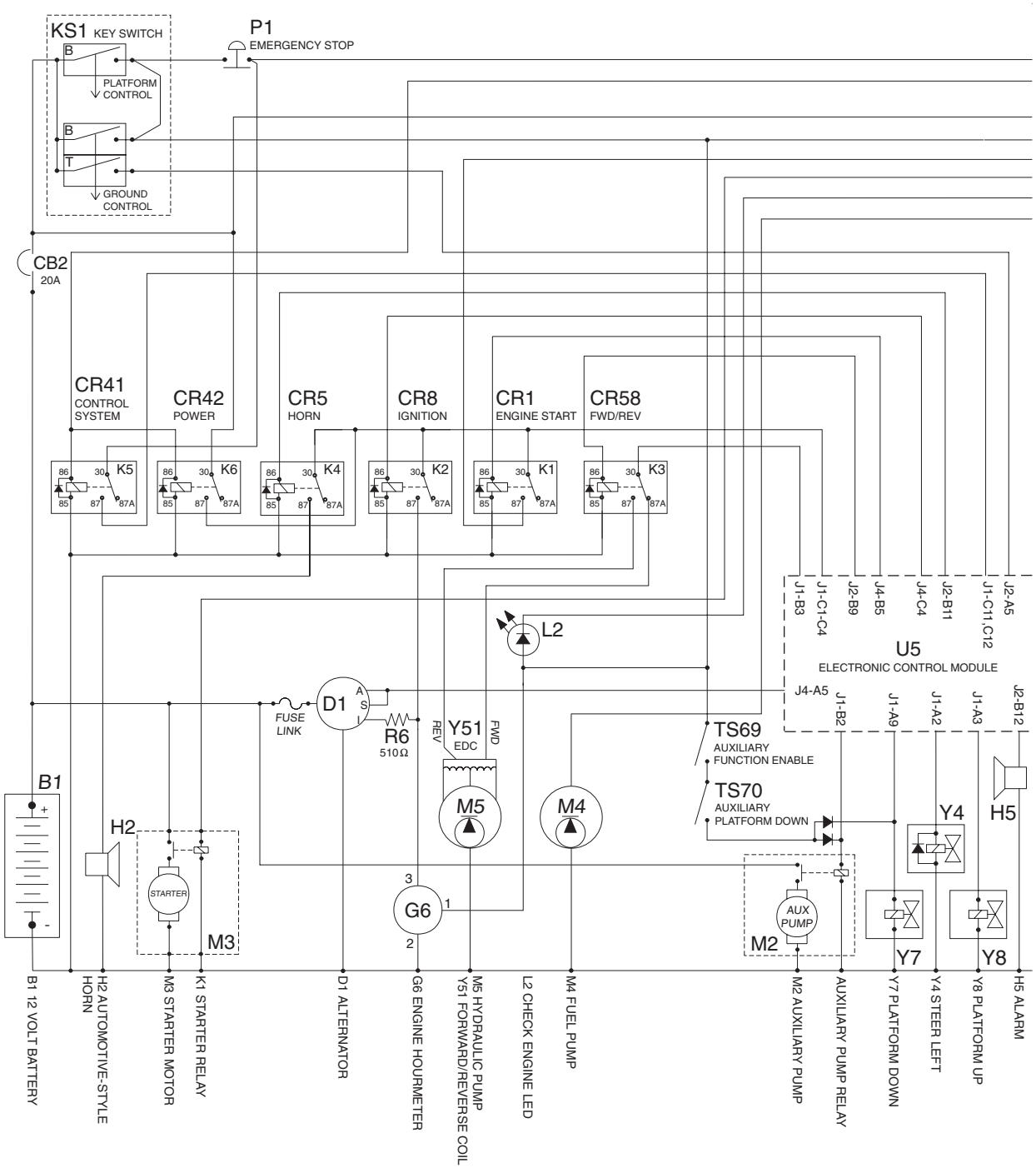
(after serial number GS9004-41693)
Part 2 of 2



Electrical Schematic

Ford Models (before serial number 40428) REV E

Part 1 of 3



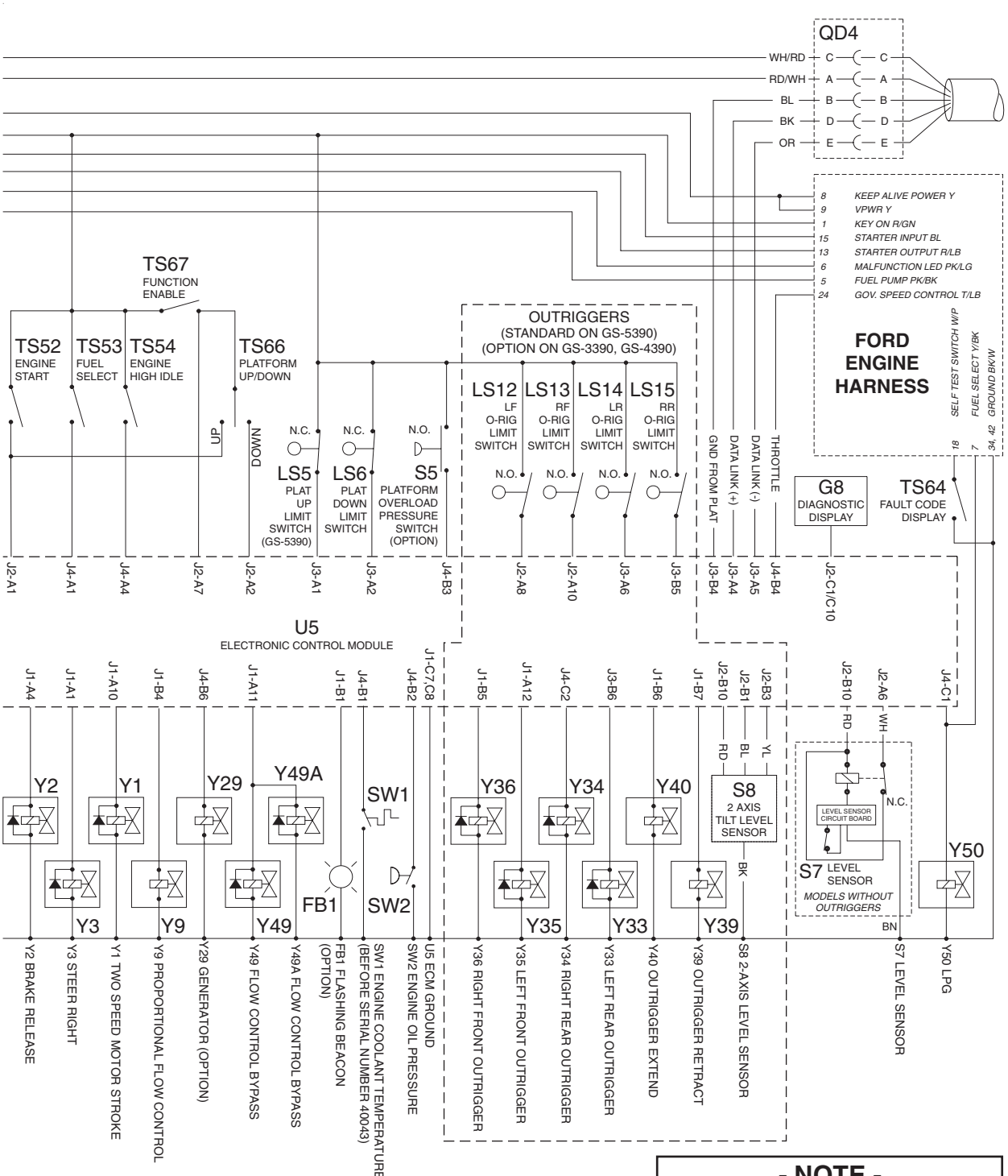
- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES0138G

Electrical Schematic

REV E

Ford Models (before serial number 40428)
Part 2 of 3



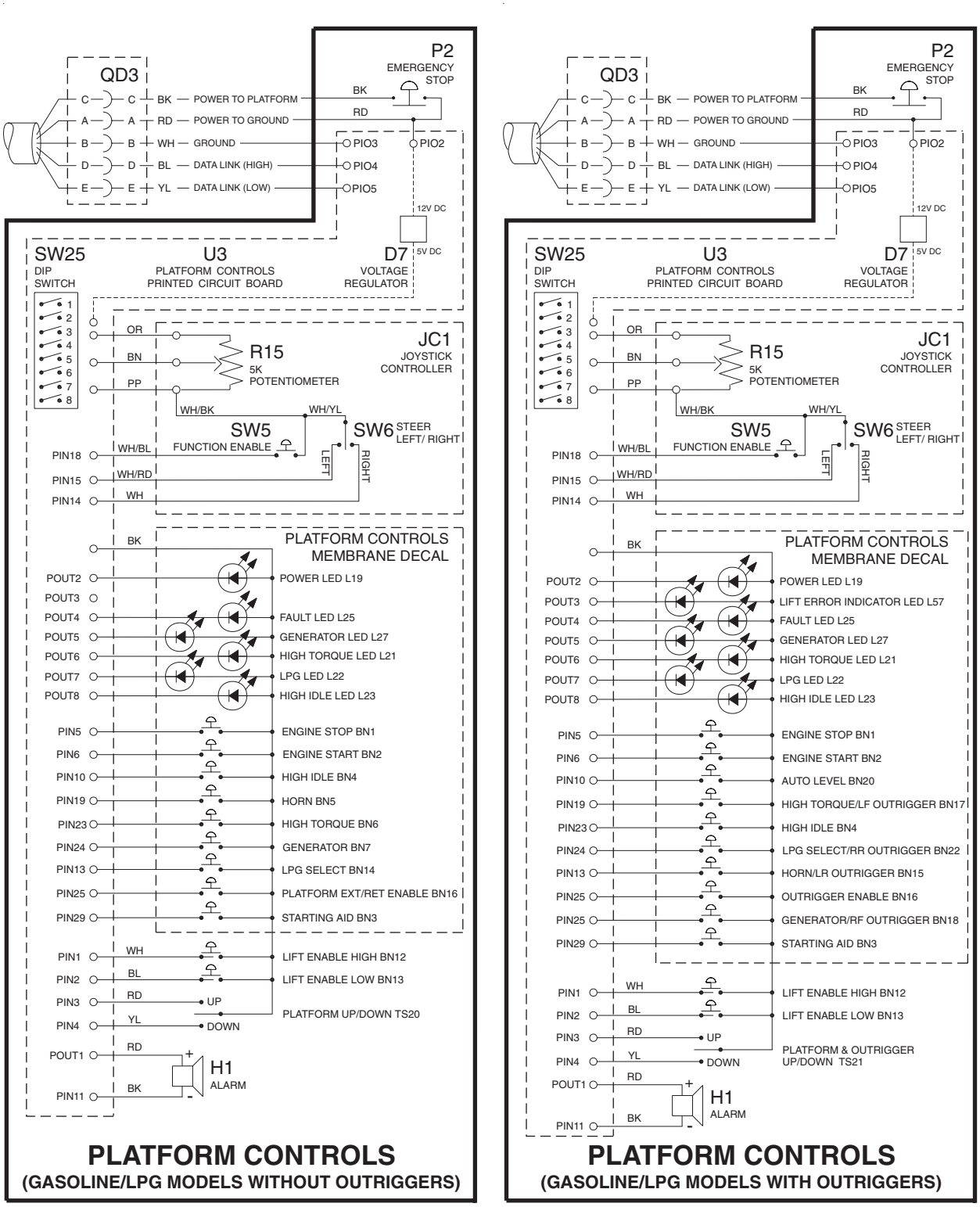
- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

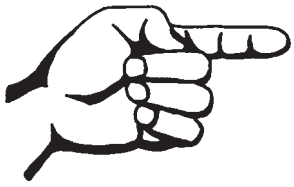
ES0138G

Electrical Schematic

Ford Models (before serial number 40428) REV E

Part 1 of 3





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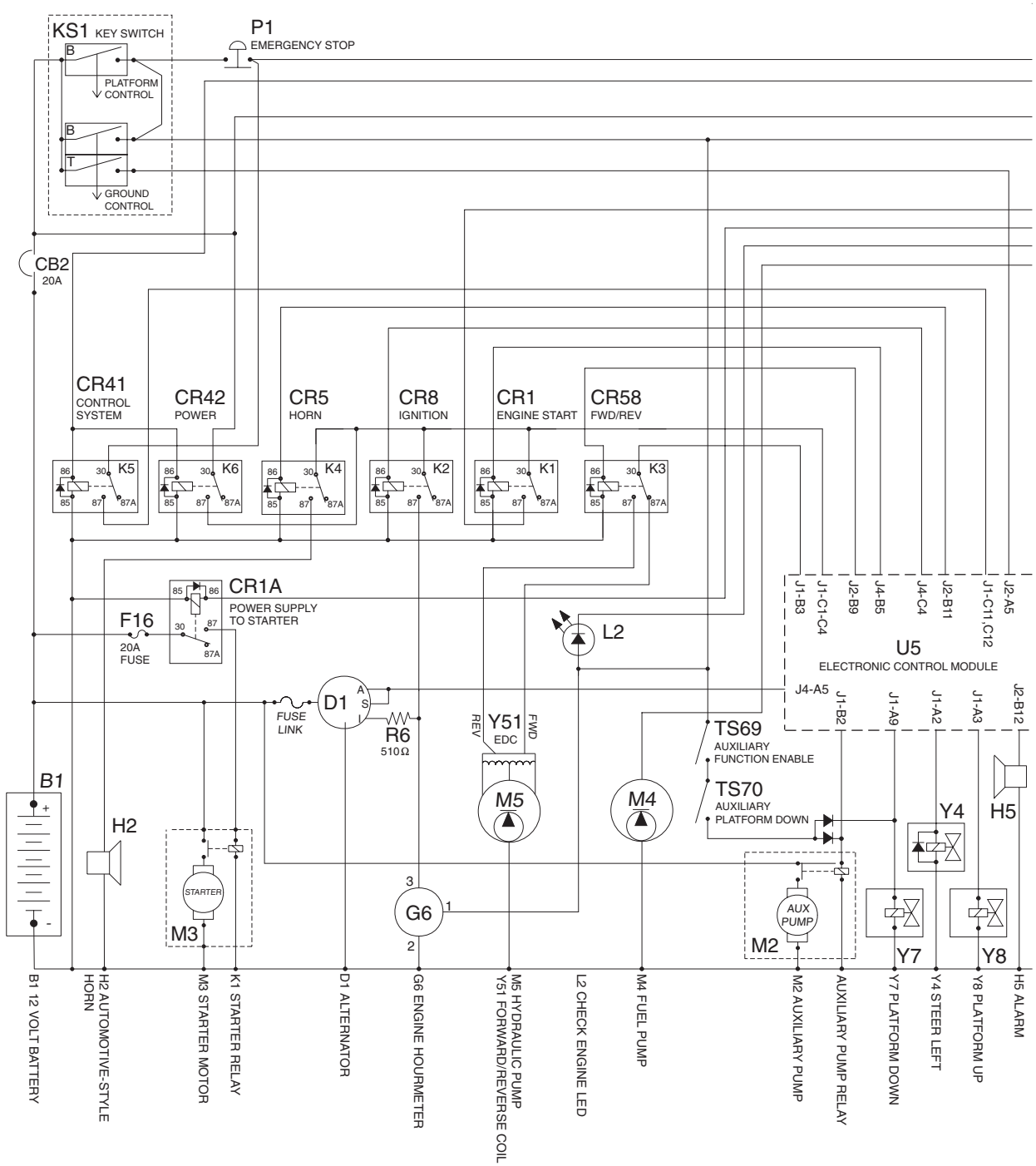
Electrical Schematic

Ford Models (from serial number 40428 to 40793) REV D

Part 1 of 3



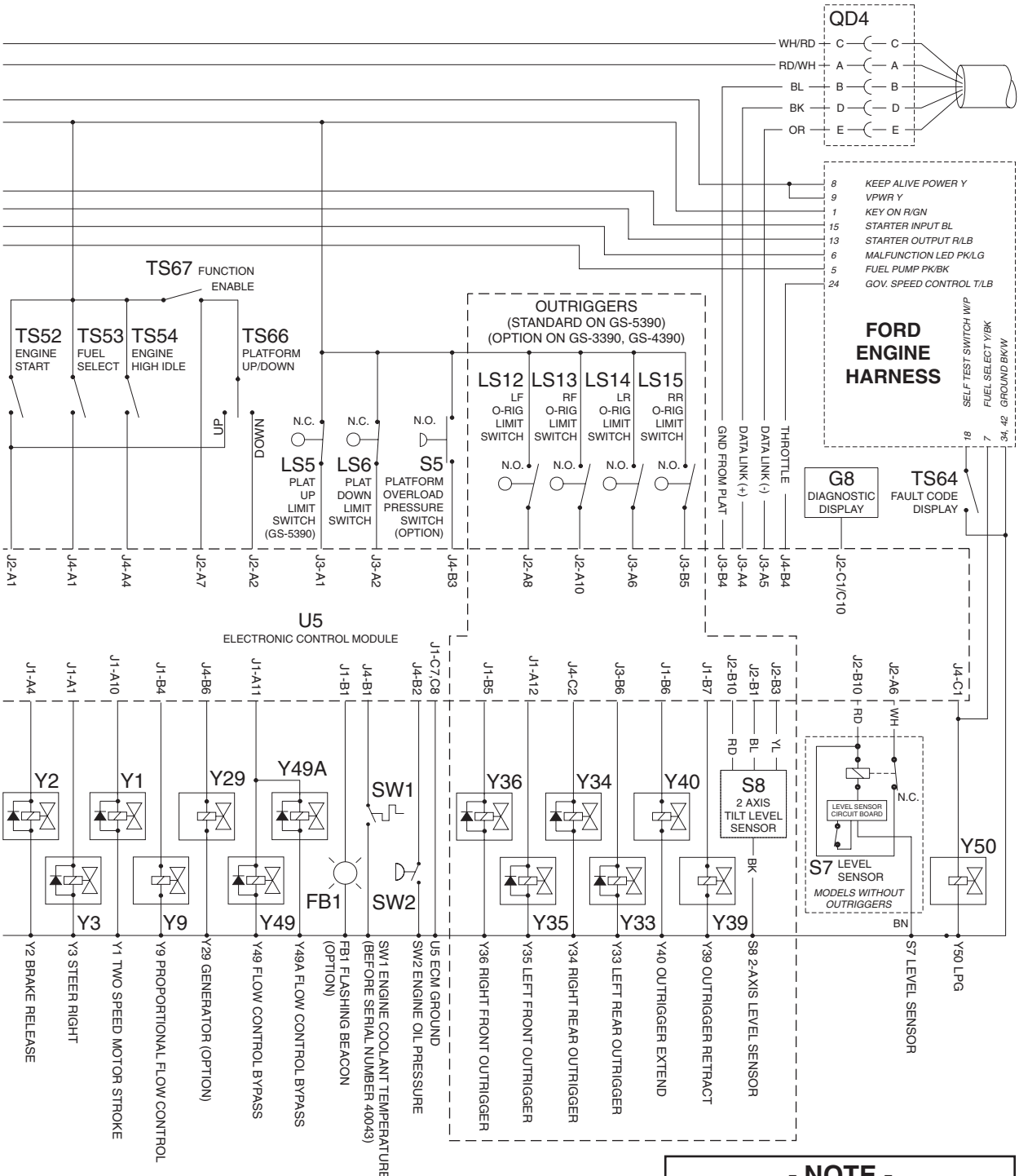
- NOTE -

MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

Electrical Schematic

REV D

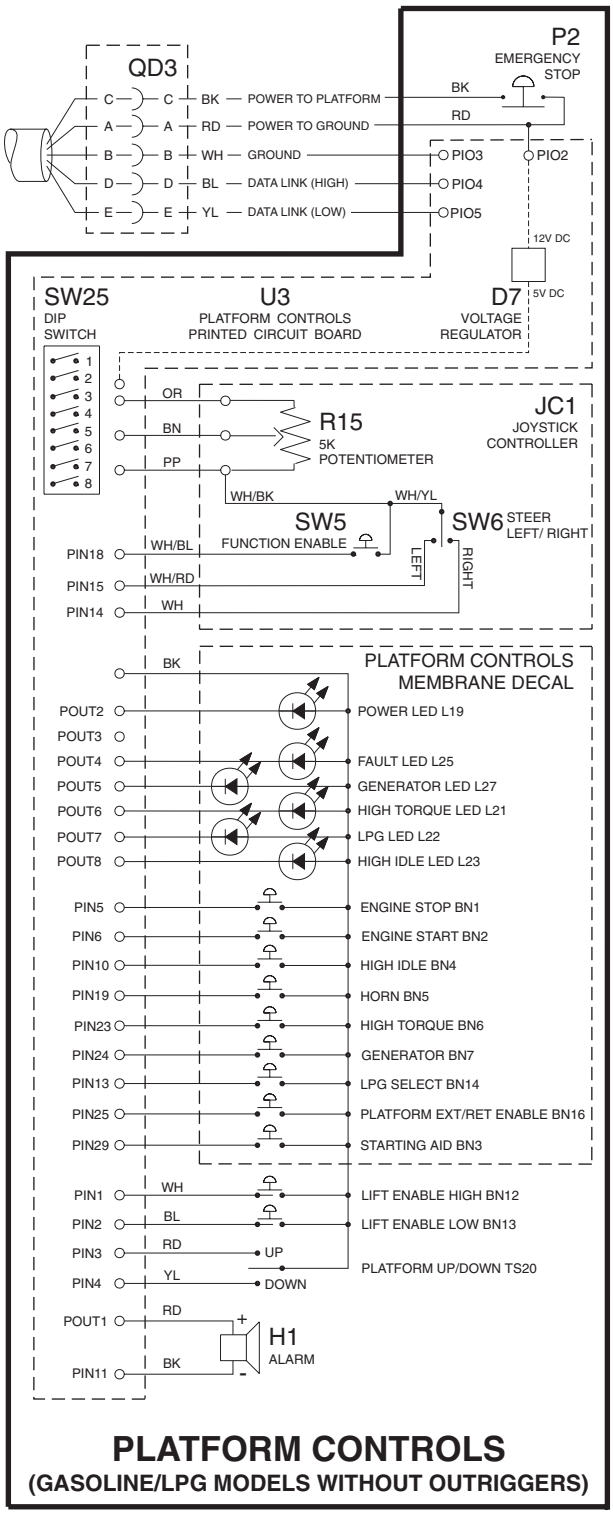
Ford Models (from serial number 40428 to 40793)
Part 2 of 3



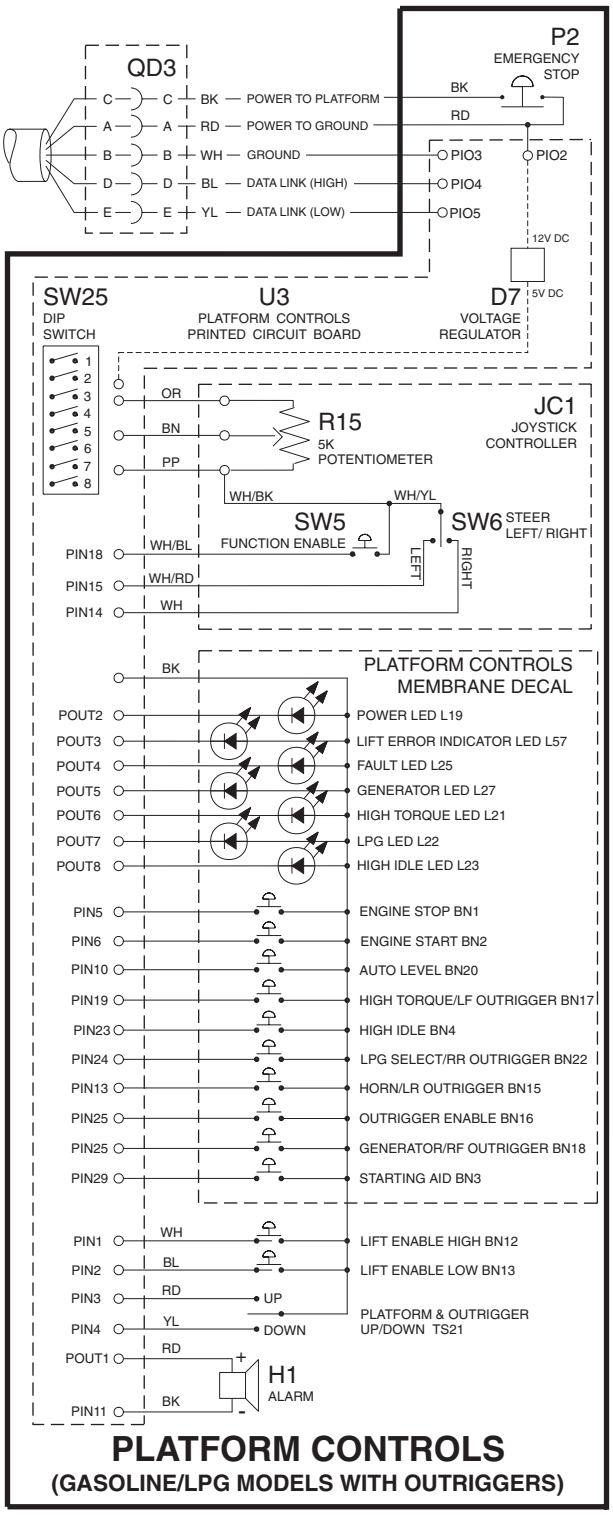
- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

Electrical Schematic

Ford Models (from serial number 40428 to 40793) REV D
Part 3 of 3

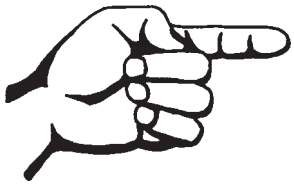


PLATFORM CONTROLS
(GASOLINE/LPG MODELS WITHOUT OUTRIGGERS)



PLATFORM CONTROLS
(GASOLINE/LPG MODELS WITH OUTRIGGERS)

REV D



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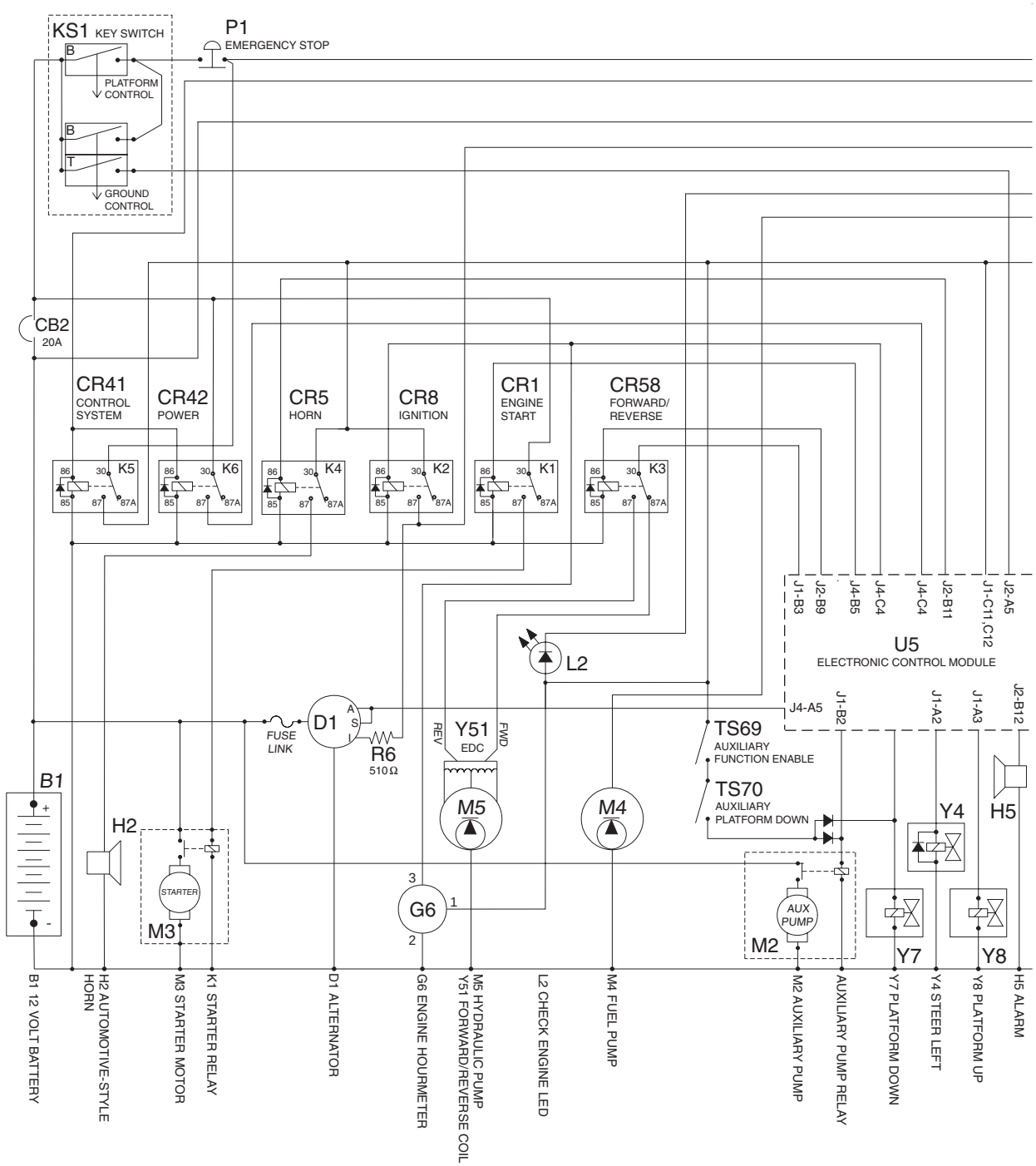
Electrical Schematic

Ford Models (from serial number 40794 to 40995) REV C

Part 1 of 3



- NOTE -

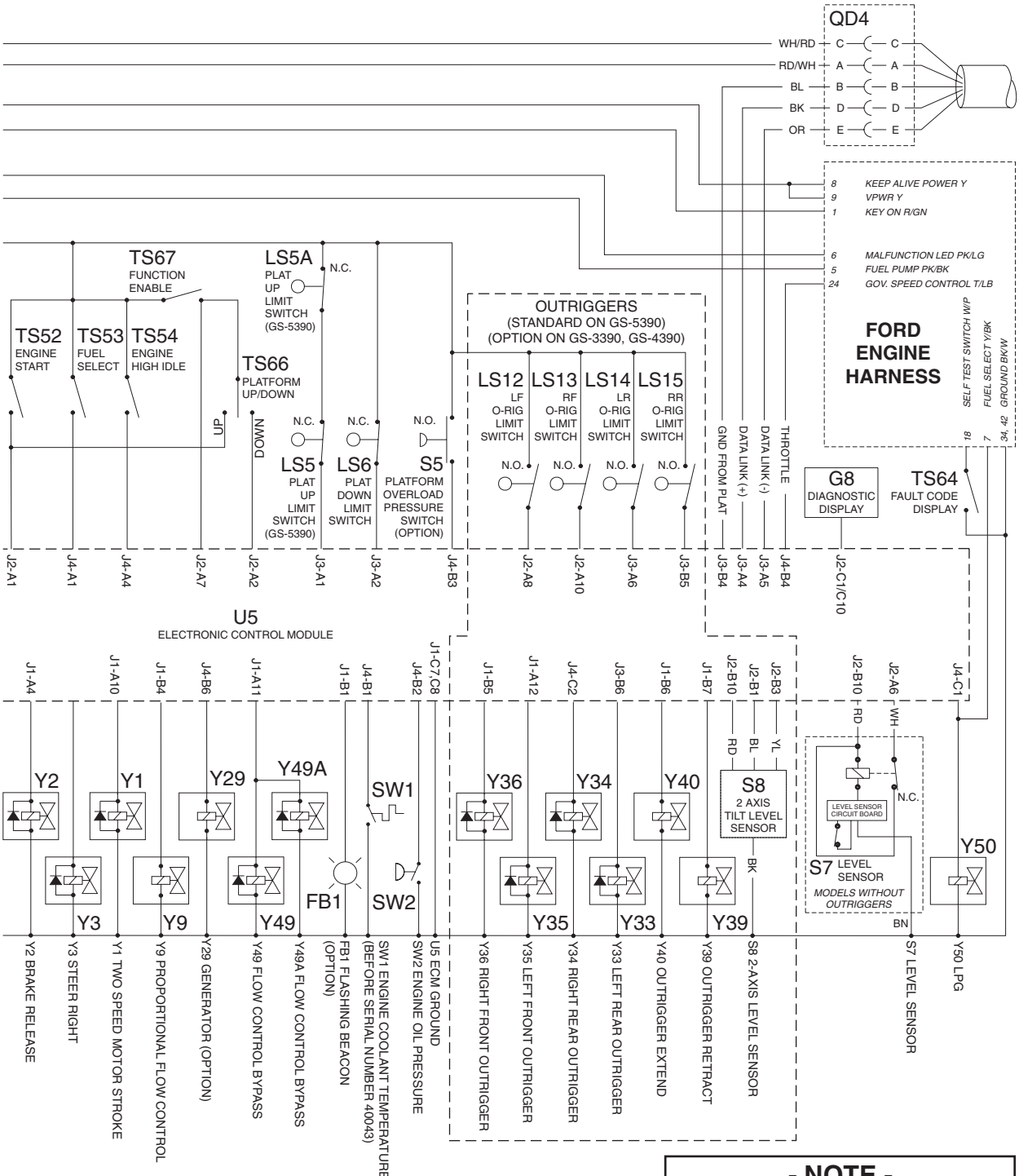
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES0138H

Electrical Schematic

REV C

Ford Models (from serial number 40794 to 40995)
Part 2 of 3

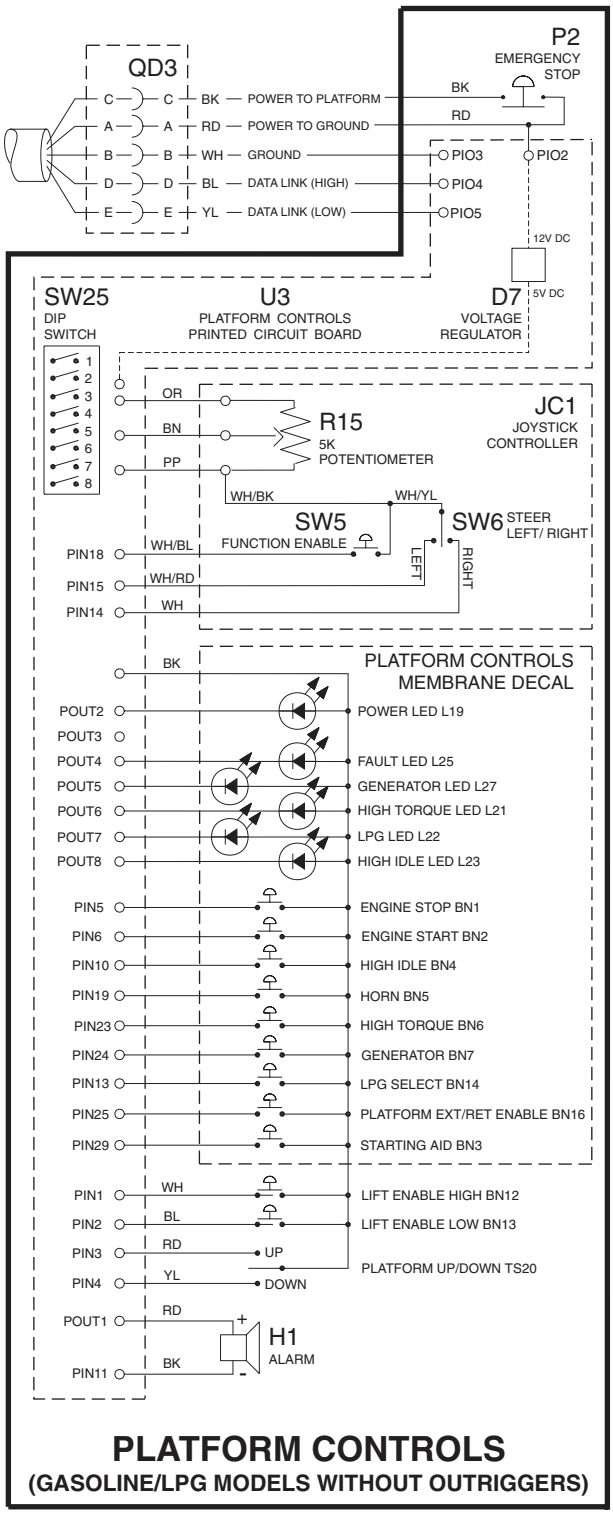


- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

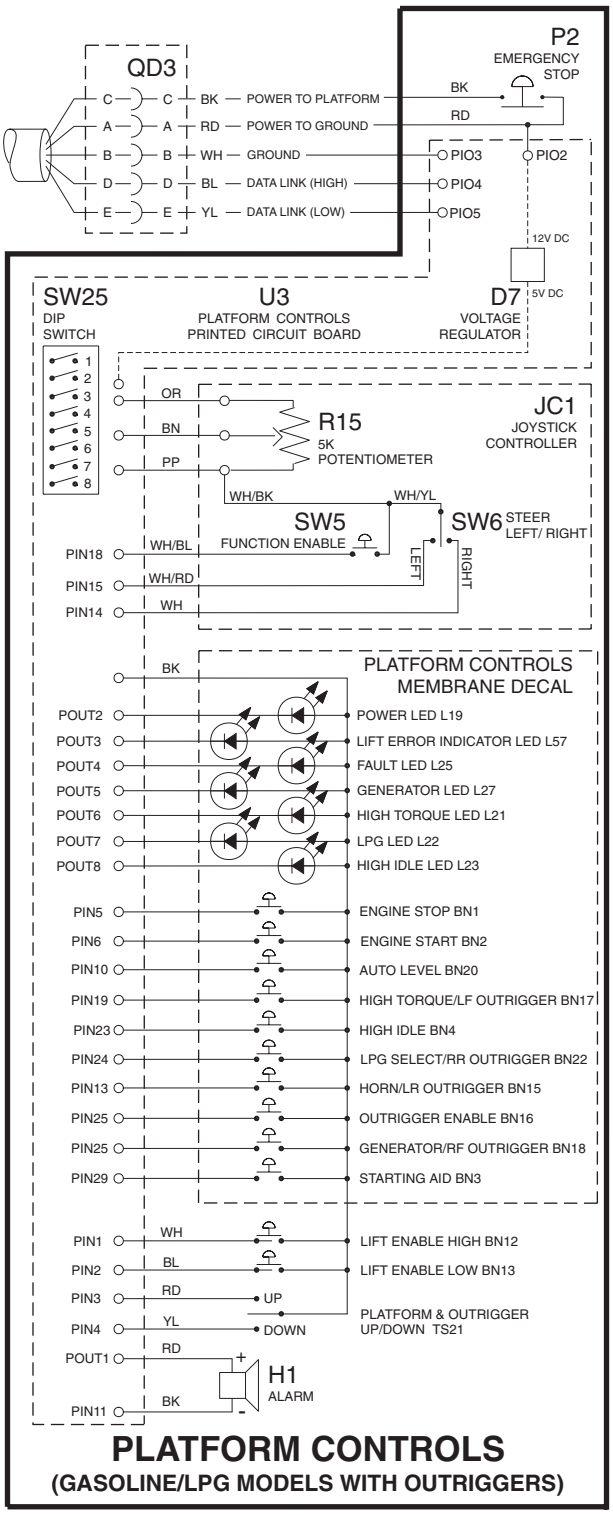
ES0138H

Electrical Schematic

Ford Models (from serial number 40794 to 40995) REV C
Part 3 of 3

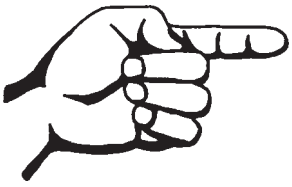


PLATFORM CONTROLS
(GASOLINE/LPG MODELS WITHOUT OUTRIGGERS)



PLATFORM CONTROLS
(GASOLINE/LPG MODELS WITH OUTRIGGERS)

REV C



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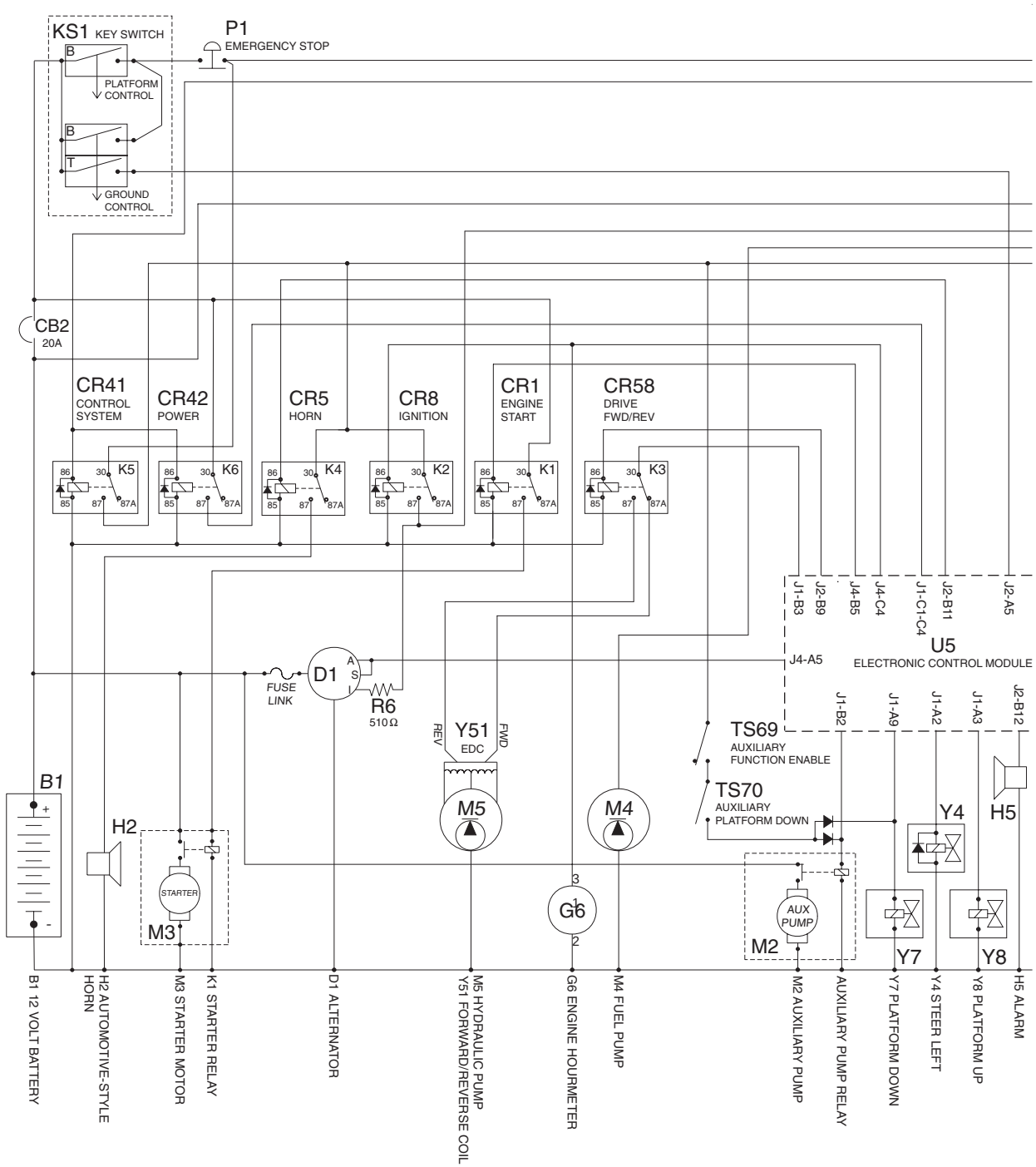
Electrical Schematic

Ford Models (from serial number 40996 to 41065) REV A

Part 1 of 3



- NOTE -

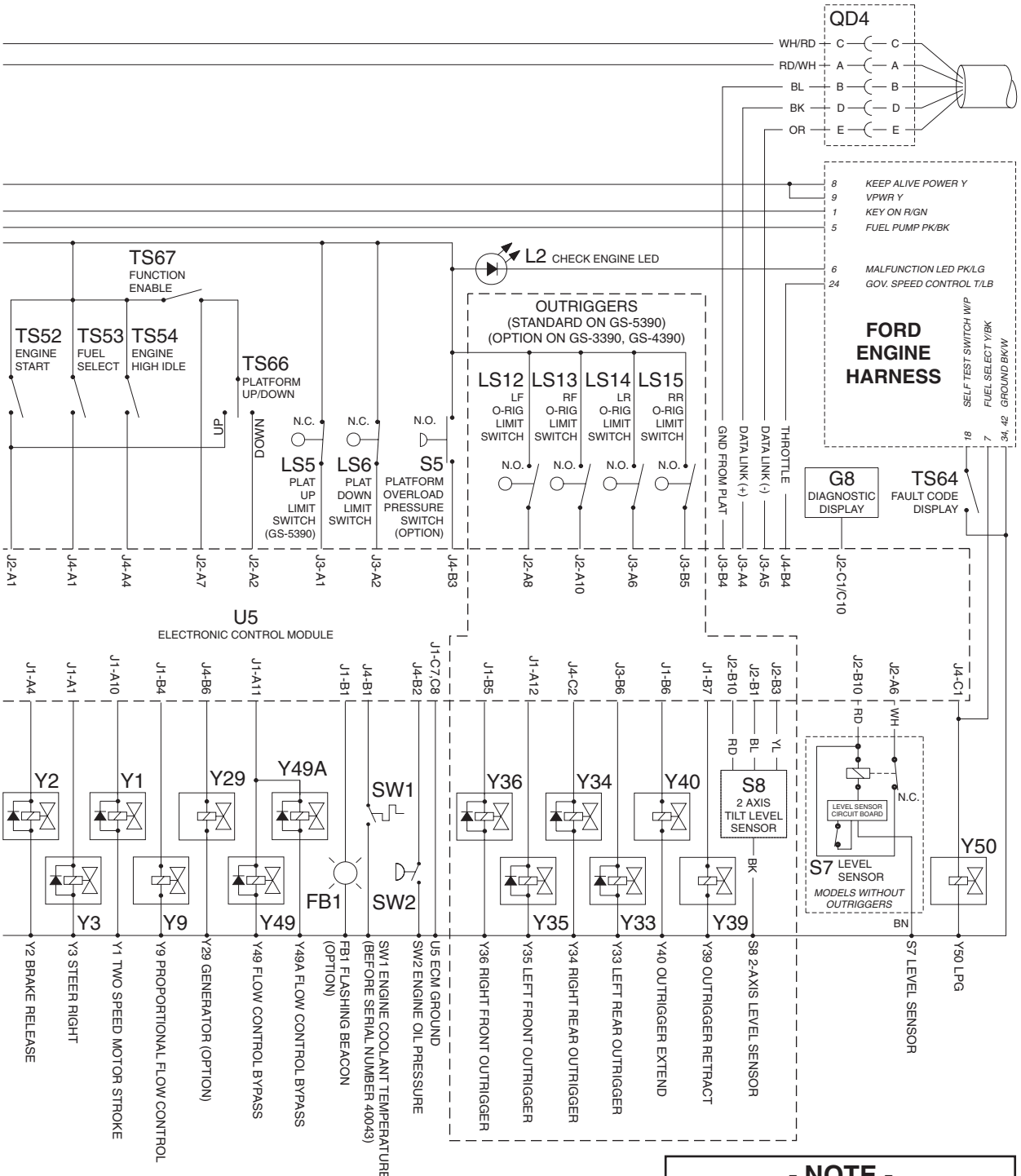
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES0138K

Electrical Schematic

REV A

Ford Models (from serial number 40996 to 41065)
Part 2 of 3

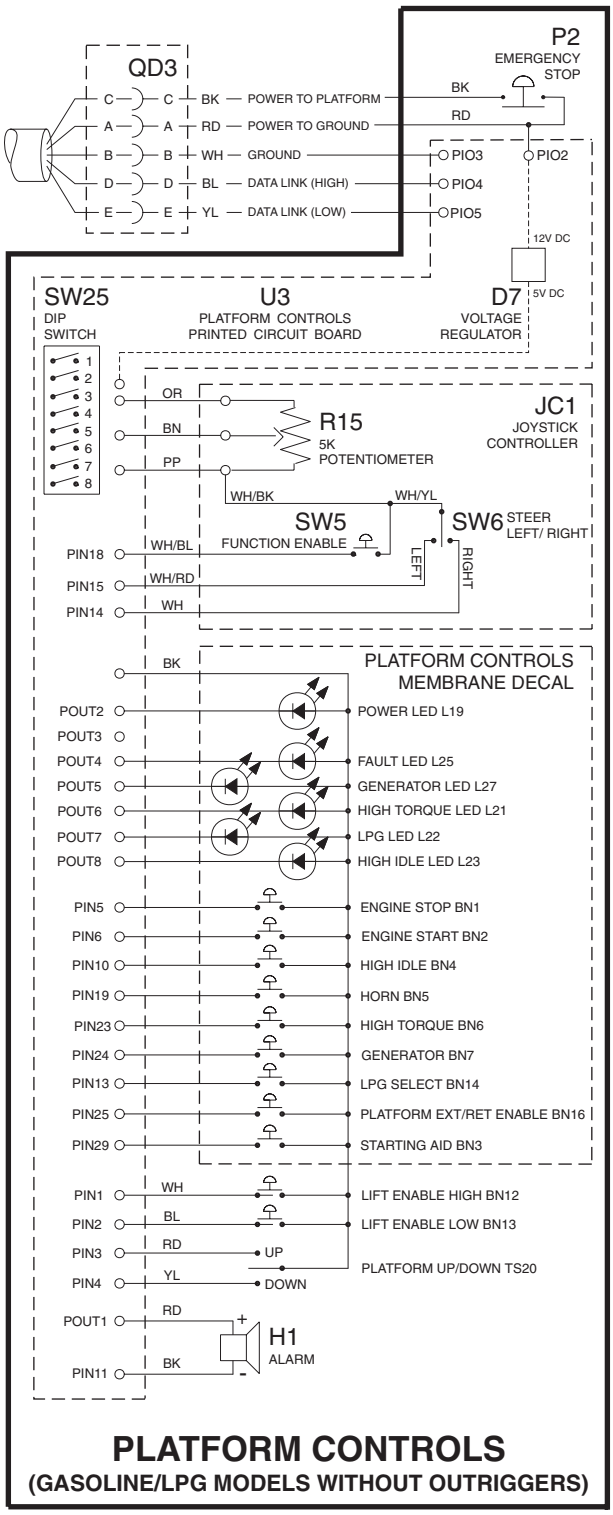


- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

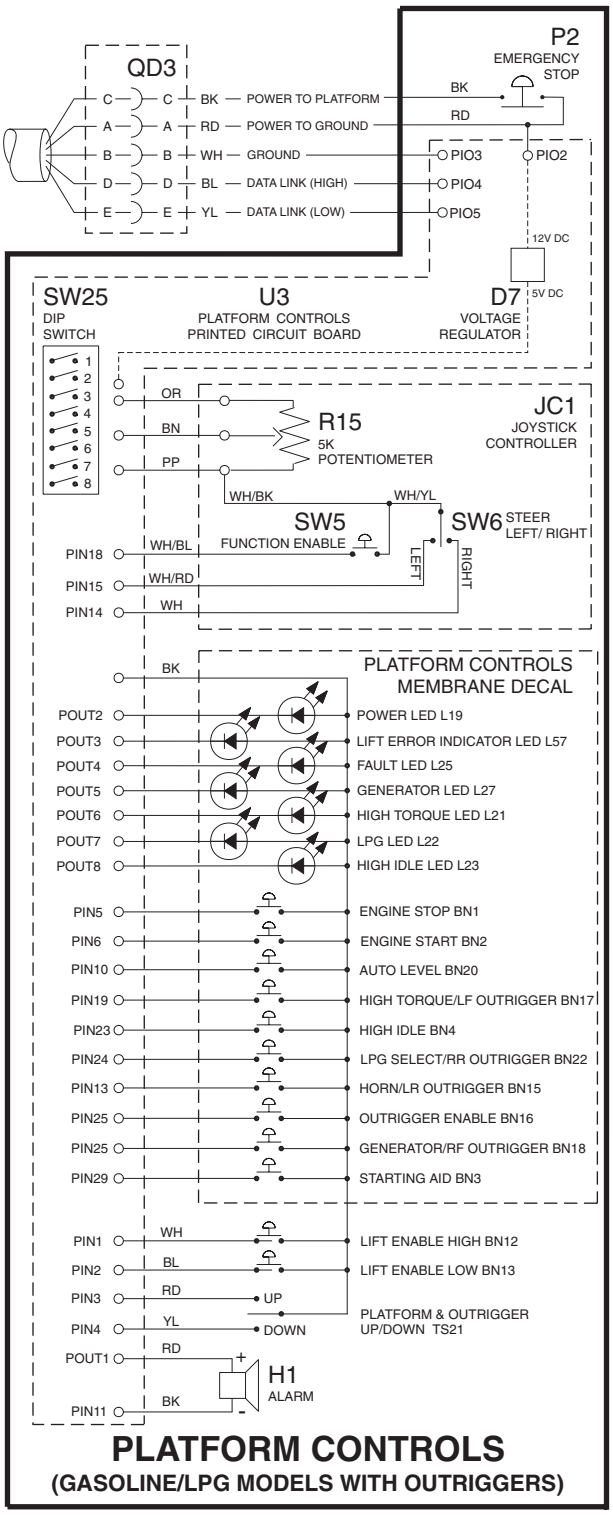
ES0138K

Electrical Schematic

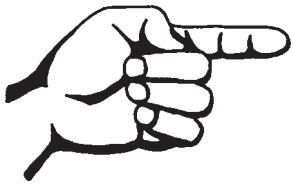
Ford Models (from serial number 40996 to 41065) REV A
Part 3 of 3



PLATFORM CONTROLS
(GASOLINE/LPG MODELS WITHOUT OUTRIGGERS)



PLATFORM CONTROLS
(GASOLINE/LPG MODELS WITH OUTRIGGERS)



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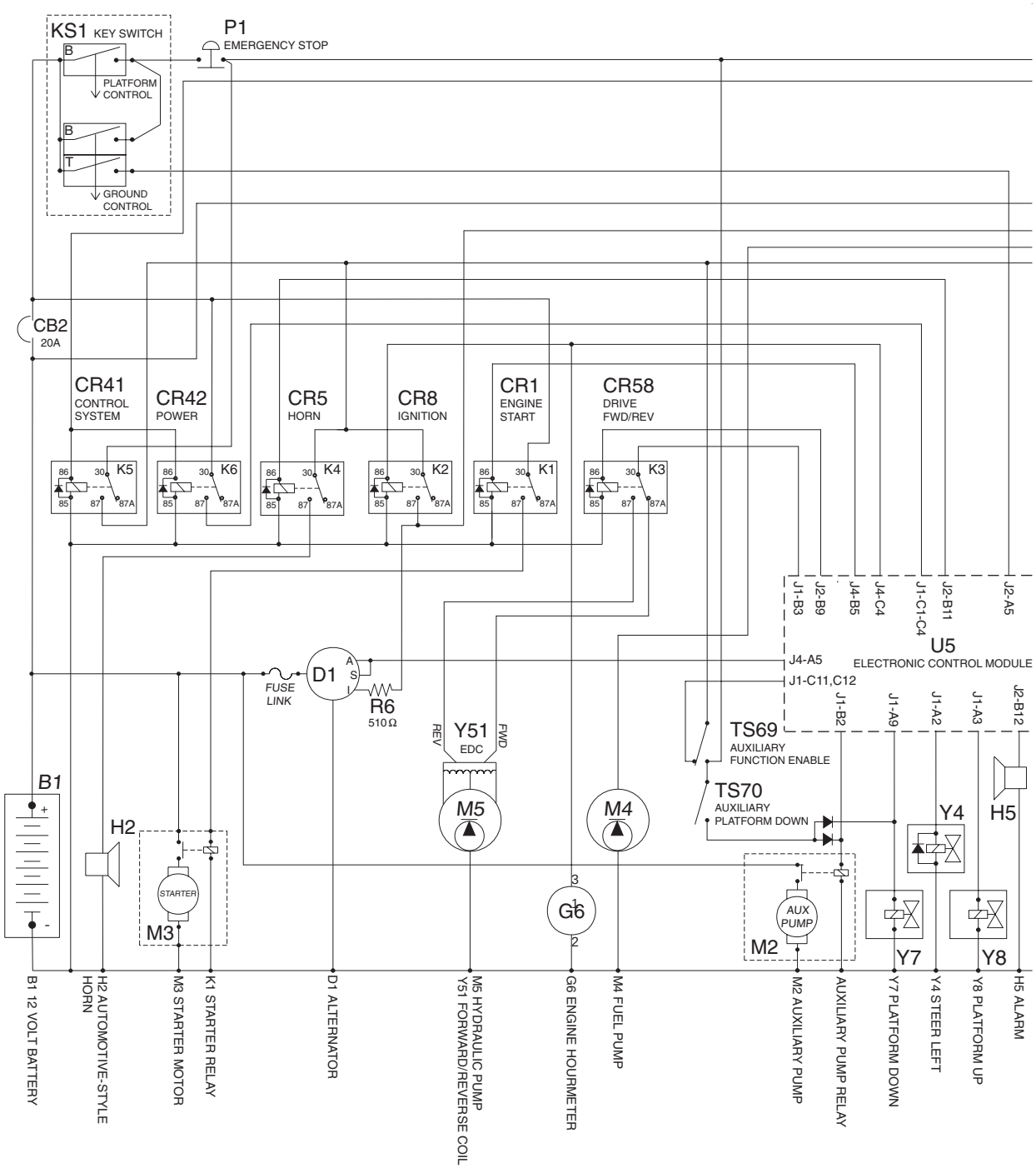
Electrical Schematic

Ford Models (from serial number 41066 to GS9003-41368) REV A

Part 1 of 3



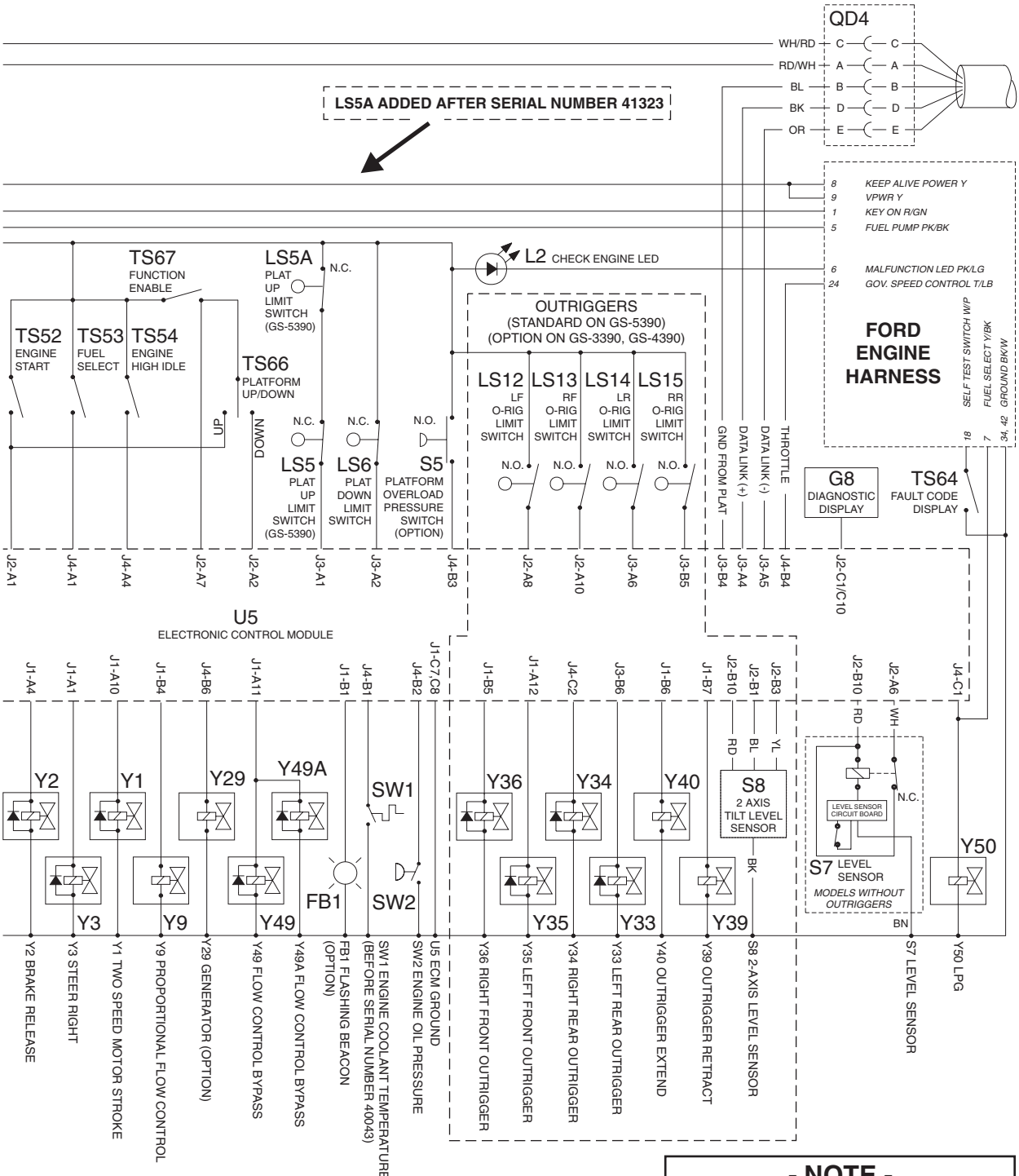
- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES0138K

Electrical Schematic

REV A

Ford Models (from serial number 41066 to GS9003-41368)
Part 2 of 3

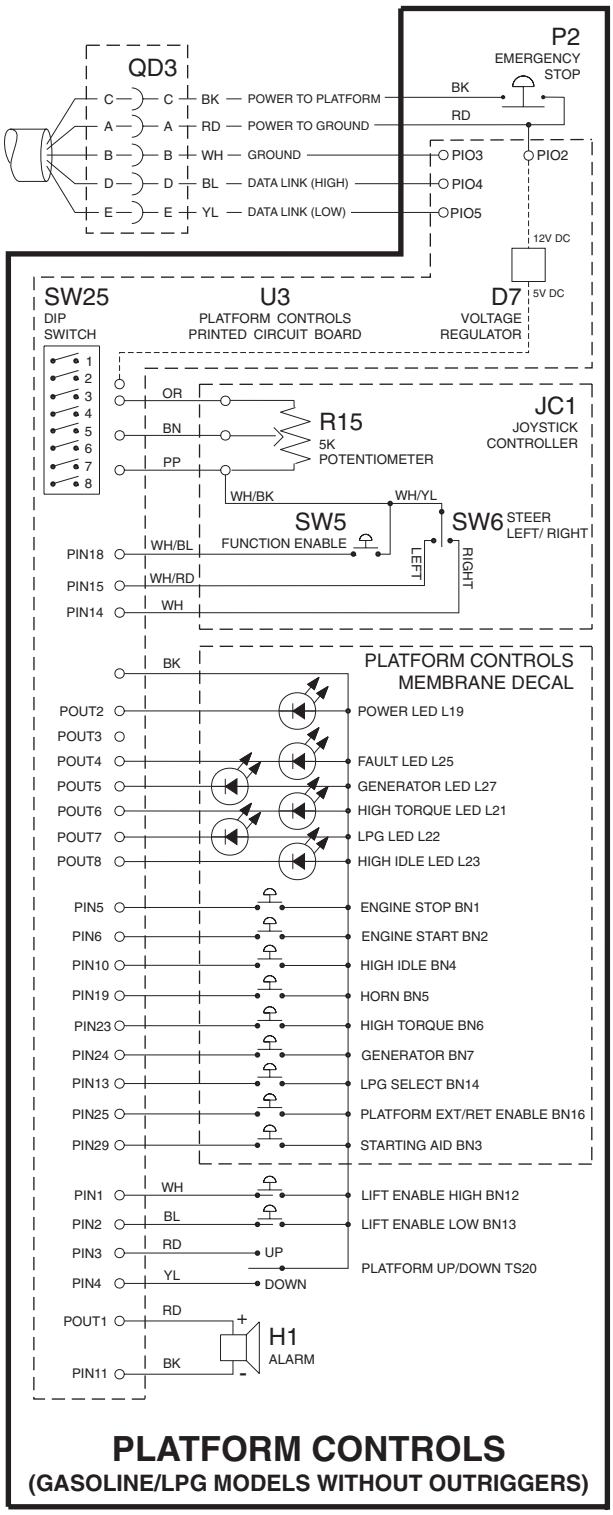


- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

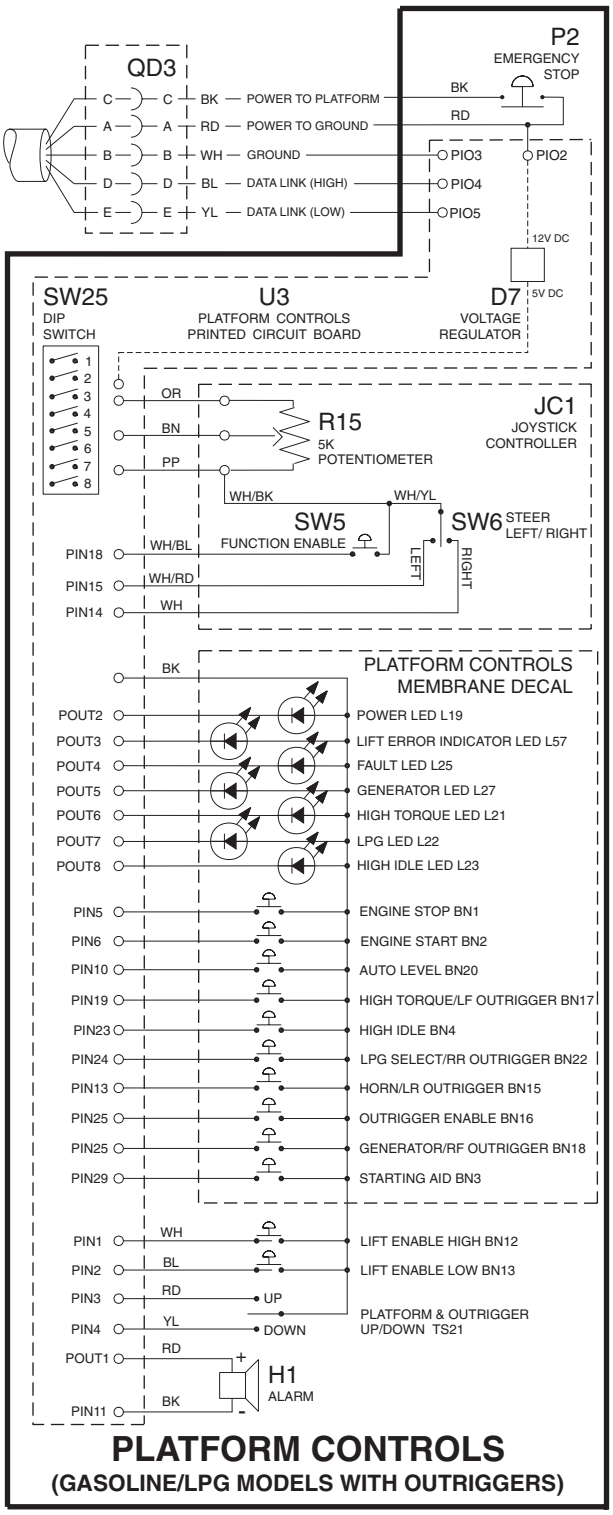
ES0138K

Electrical Schematic

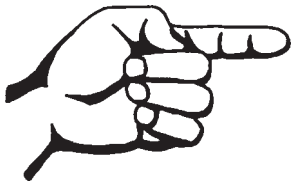
Ford Models (from serial number 41066 to GS9003-41368) REV A
Part 3 of 3



PLATFORM CONTROLS
(GASOLINE/LPG MODELS WITHOUT OUTRIGGERS)



PLATFORM CONTROLS
(GASOLINE/LPG MODELS WITH OUTRIGGERS)



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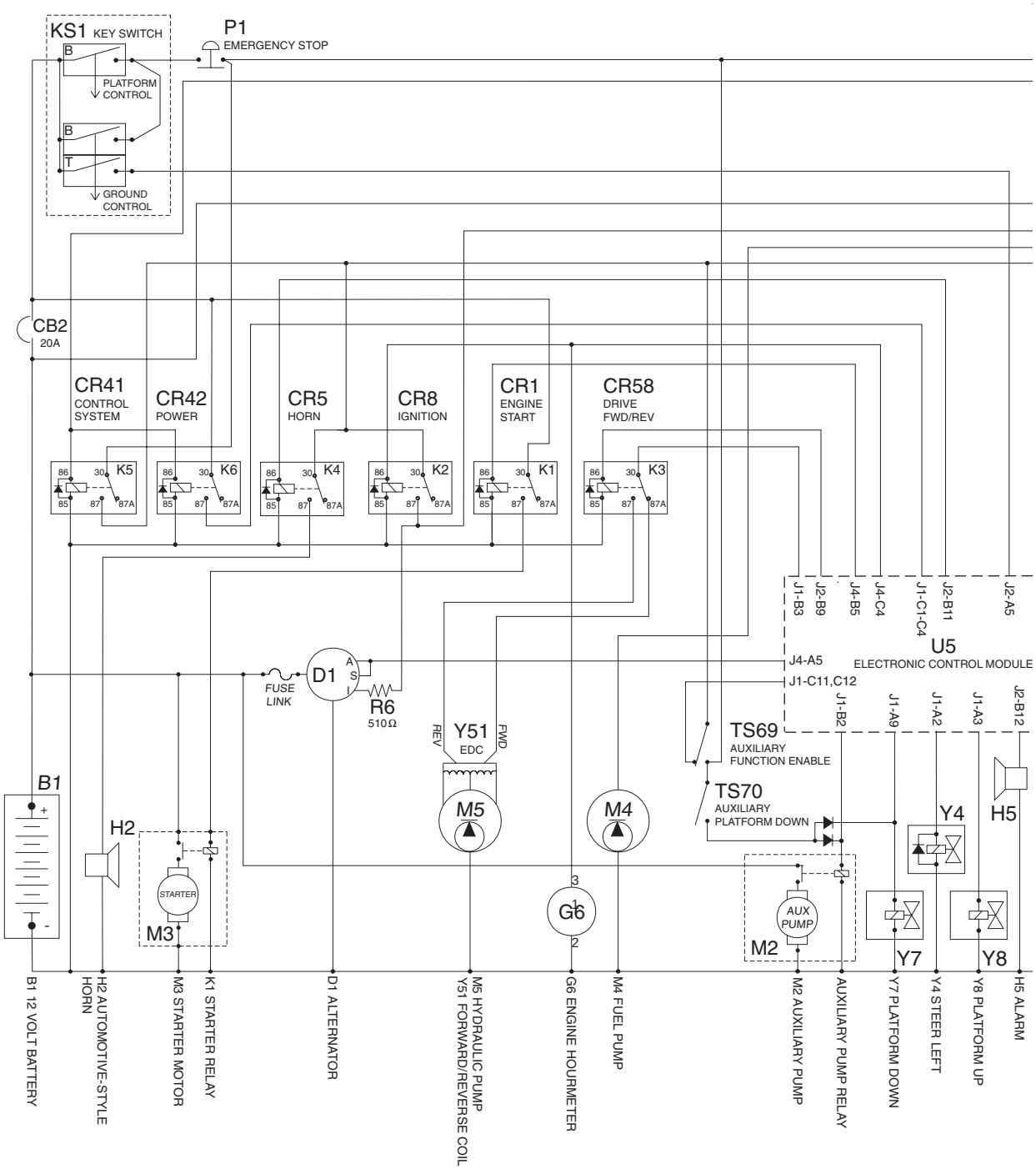
Electrical Schematic

Ford Models (from serial number GS9003-41369 to GS9003-41522) REV A

Part 1 of 3



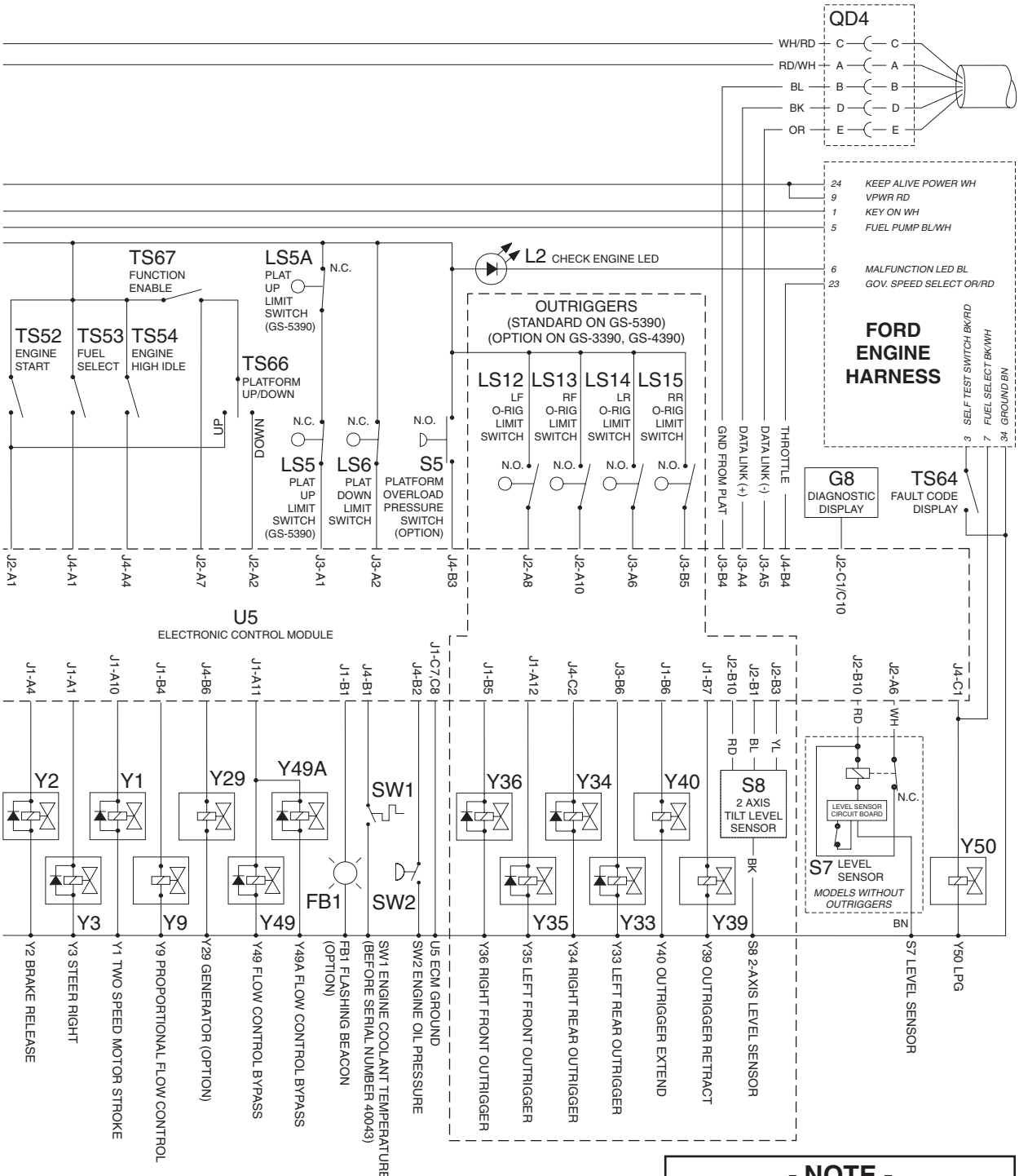
- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES0138L

Electrical Schematic

REV A

Ford Models (from serial number GS9003-41369 to GS9003-41522)
Part 2 of 3

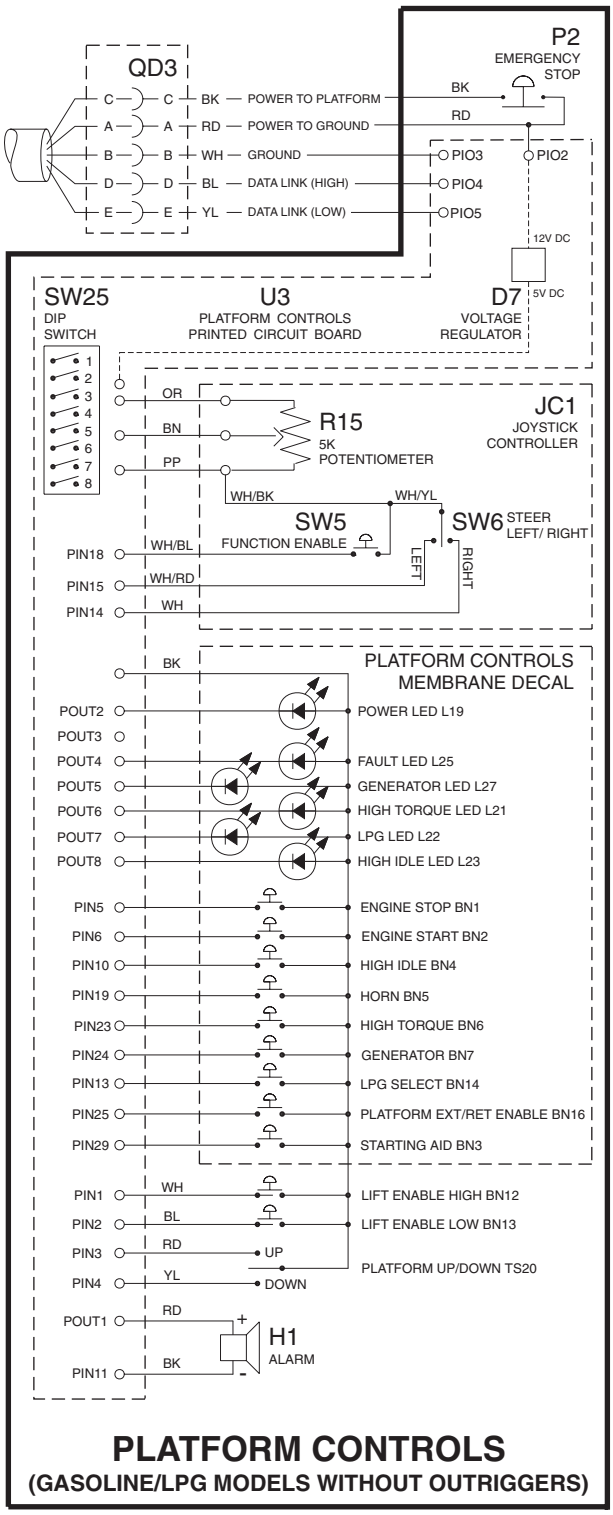


- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

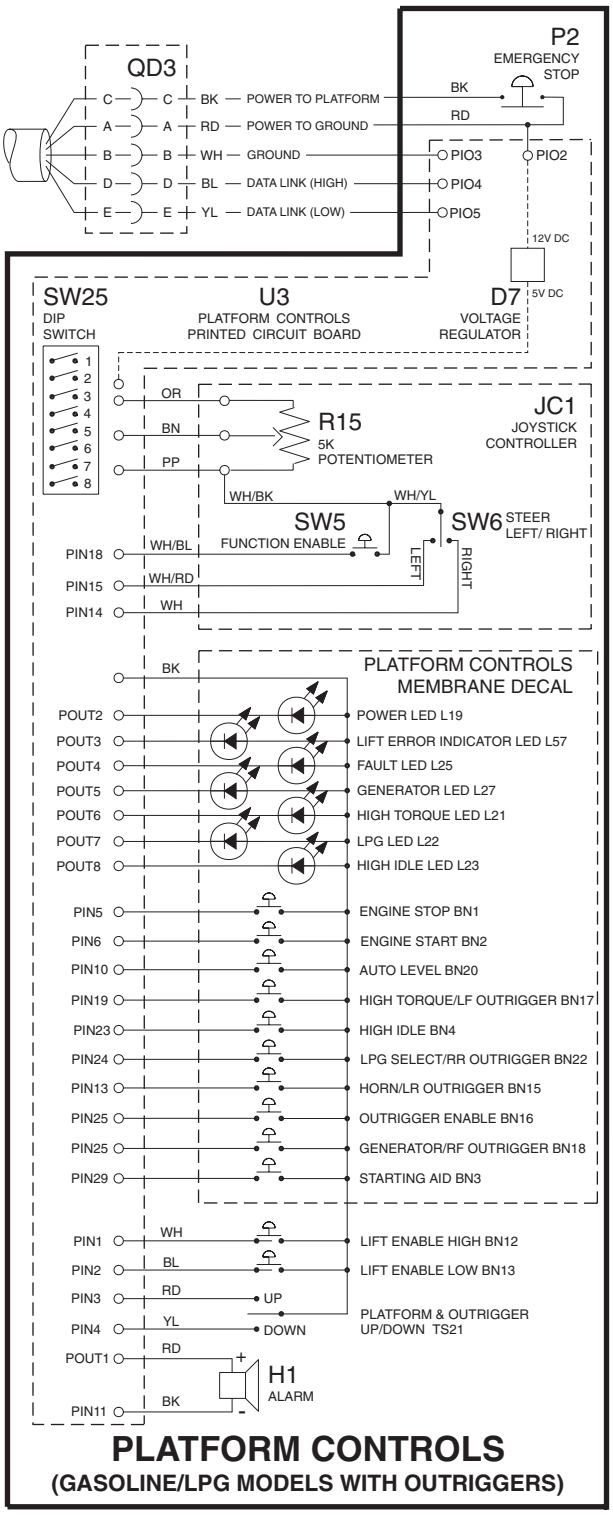
ES0138L

Electrical Schematic

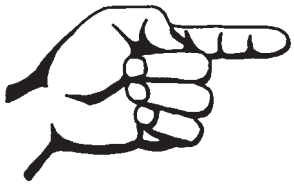
Ford Models (from serial number GS9003-41369 to GS9003-41522) REV A
Part 3 of 3



PLATFORM CONTROLS
(GASOLINE/LPG MODELS WITHOUT OUTRIGGERS)



PLATFORM CONTROLS
(GASOLINE/LPG MODELS WITH OUTRIGGERS)



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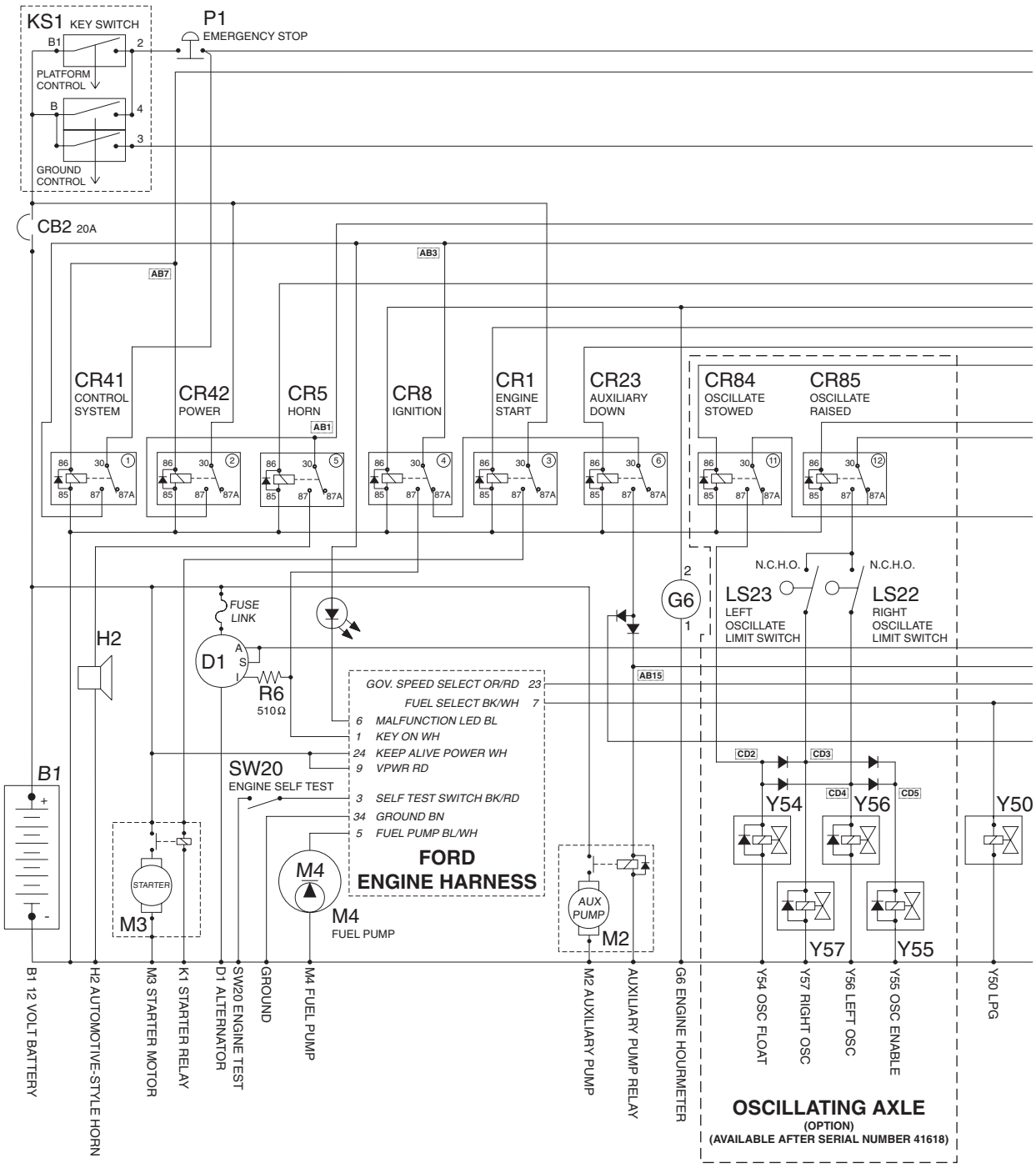
Electrical Schematic

ANSI Models with Ford Power REV B
(from serial number GS9003-41523 to GS9004-41693)
Part 1 of 3



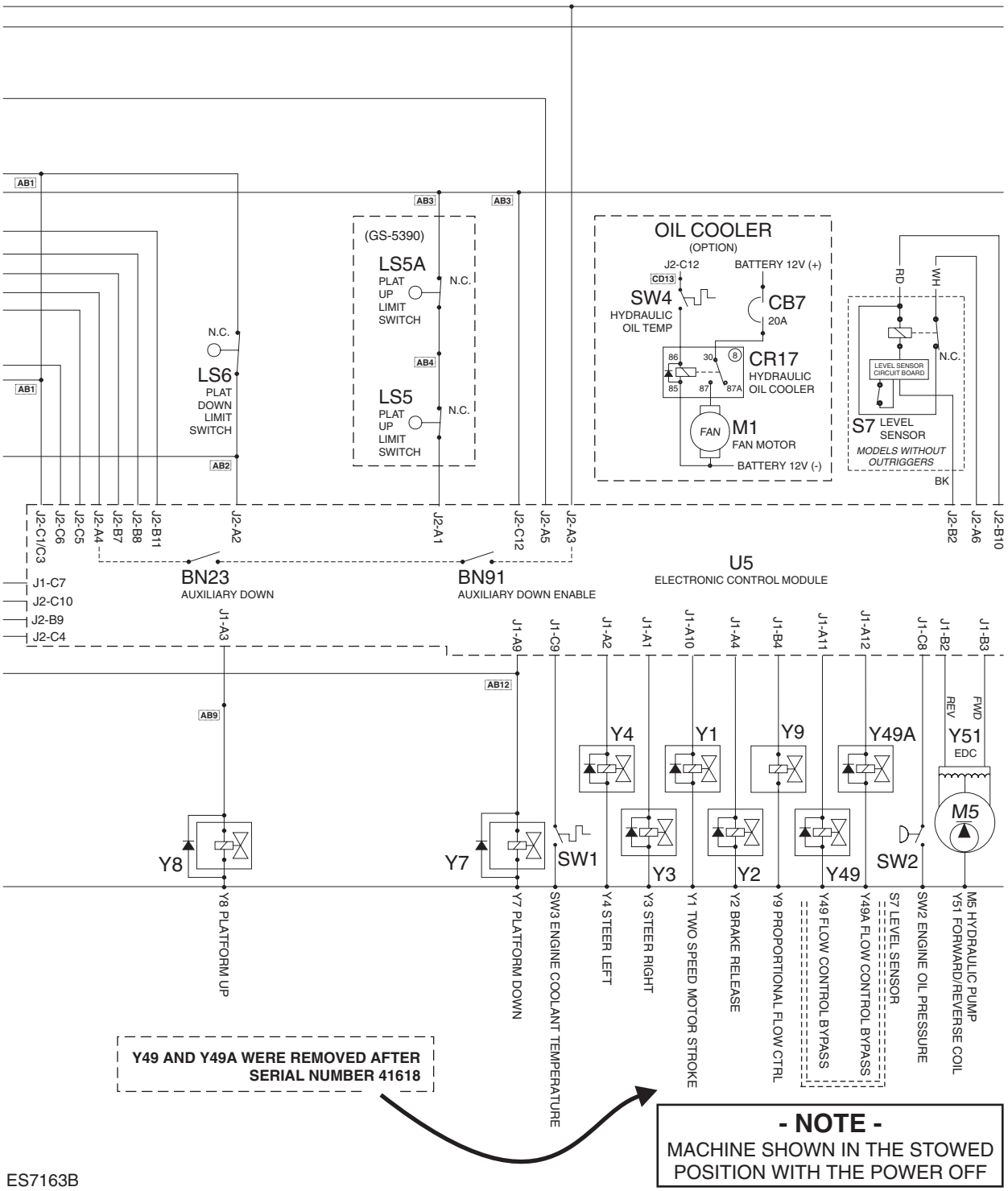
- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES7163B

Electrical Schematic

REV B

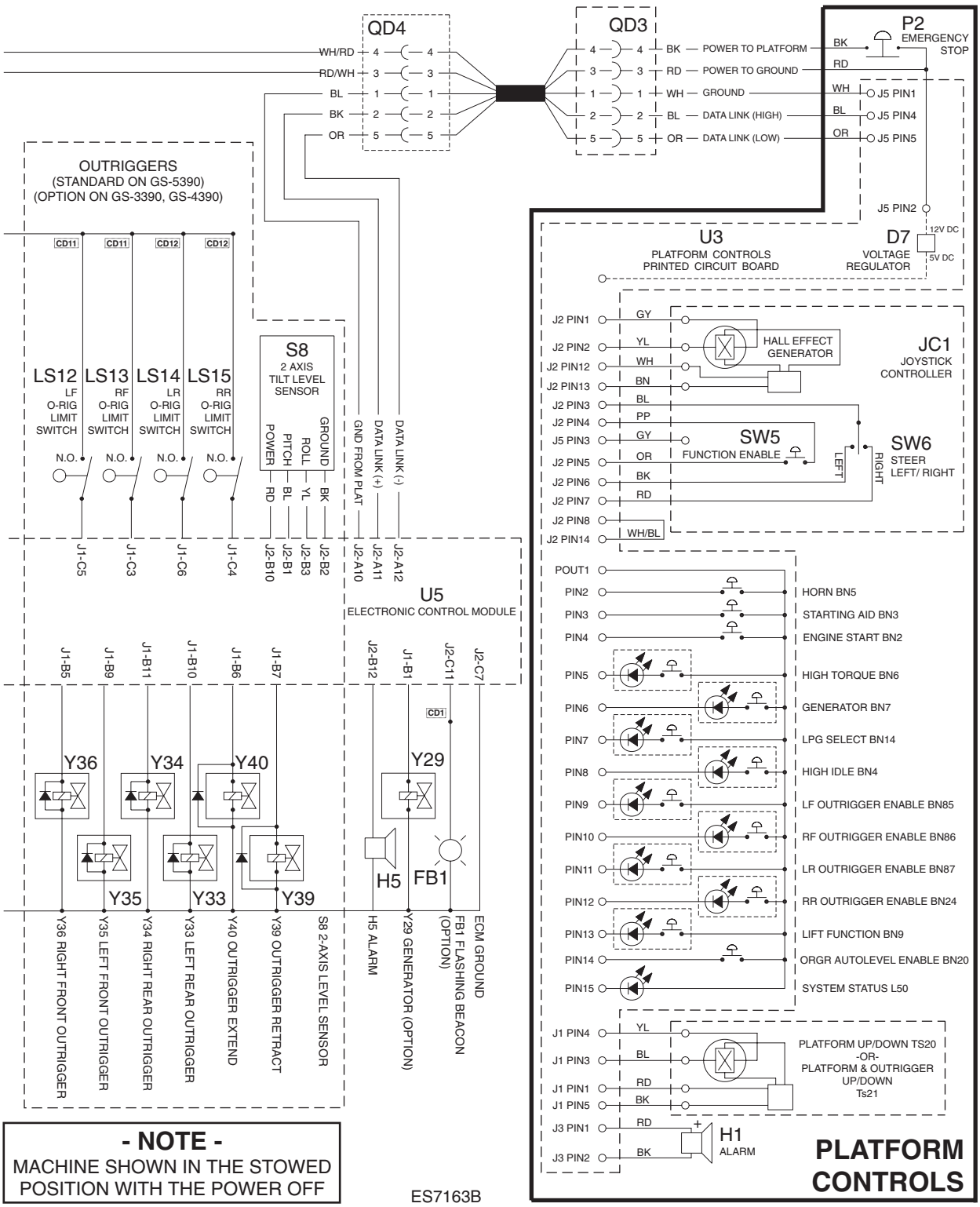
ANSI Models with Ford Power
(from serial number GS9003-41523 to GS9004-41693)
Part 2 of 3



ES7163B

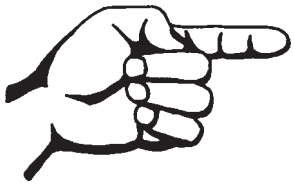
Electrical Schematic

ANSI Models with Ford Power REV B
(from serial number GS9003-41523 to GS9004-41693)
Part 3 of 3



- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES7163B



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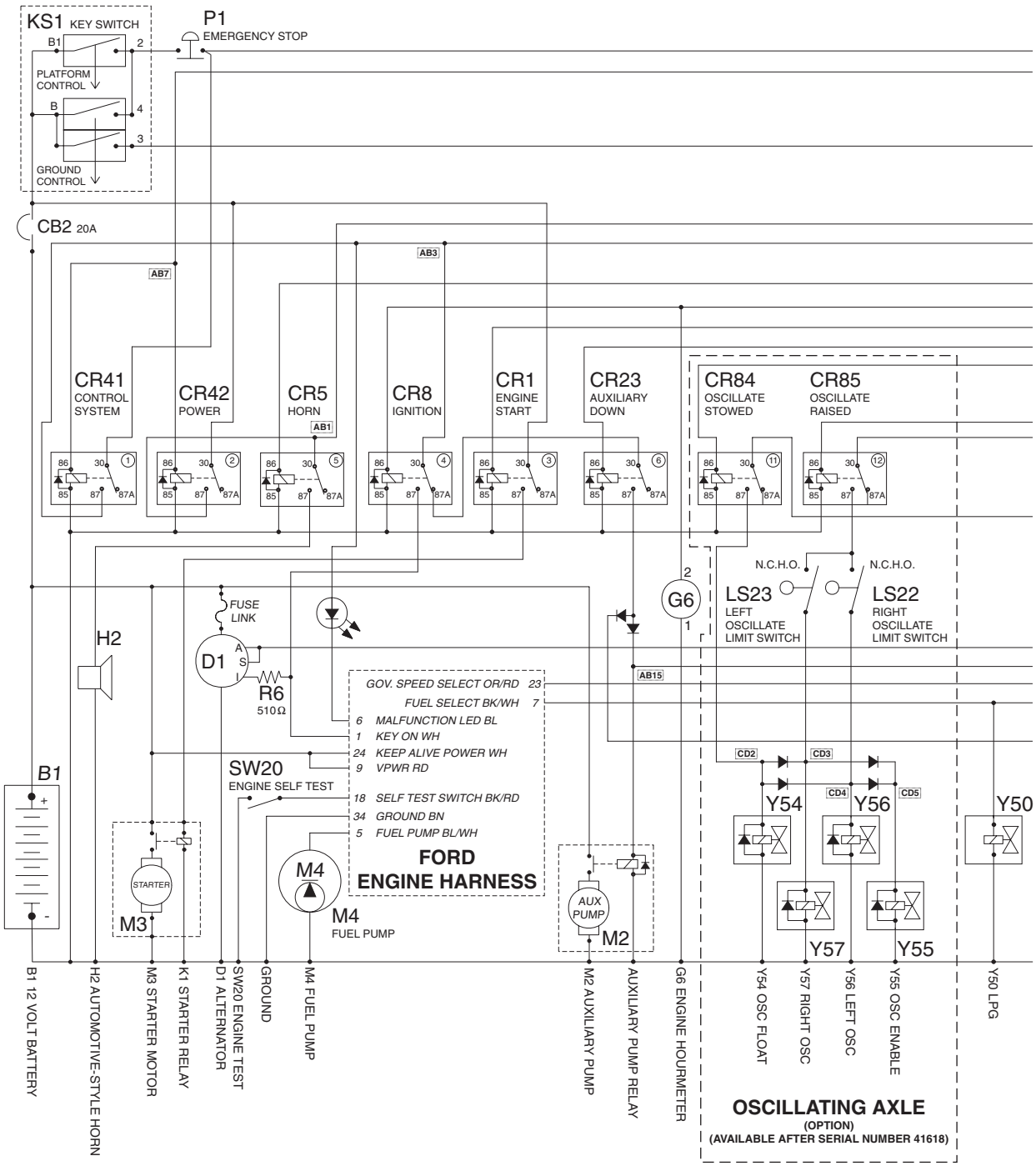
Electrical Schematic

ANSI Models with Ford Power REV B
(from serial number GS9004-41694 to GS9005-42143)
Part 1 of 3



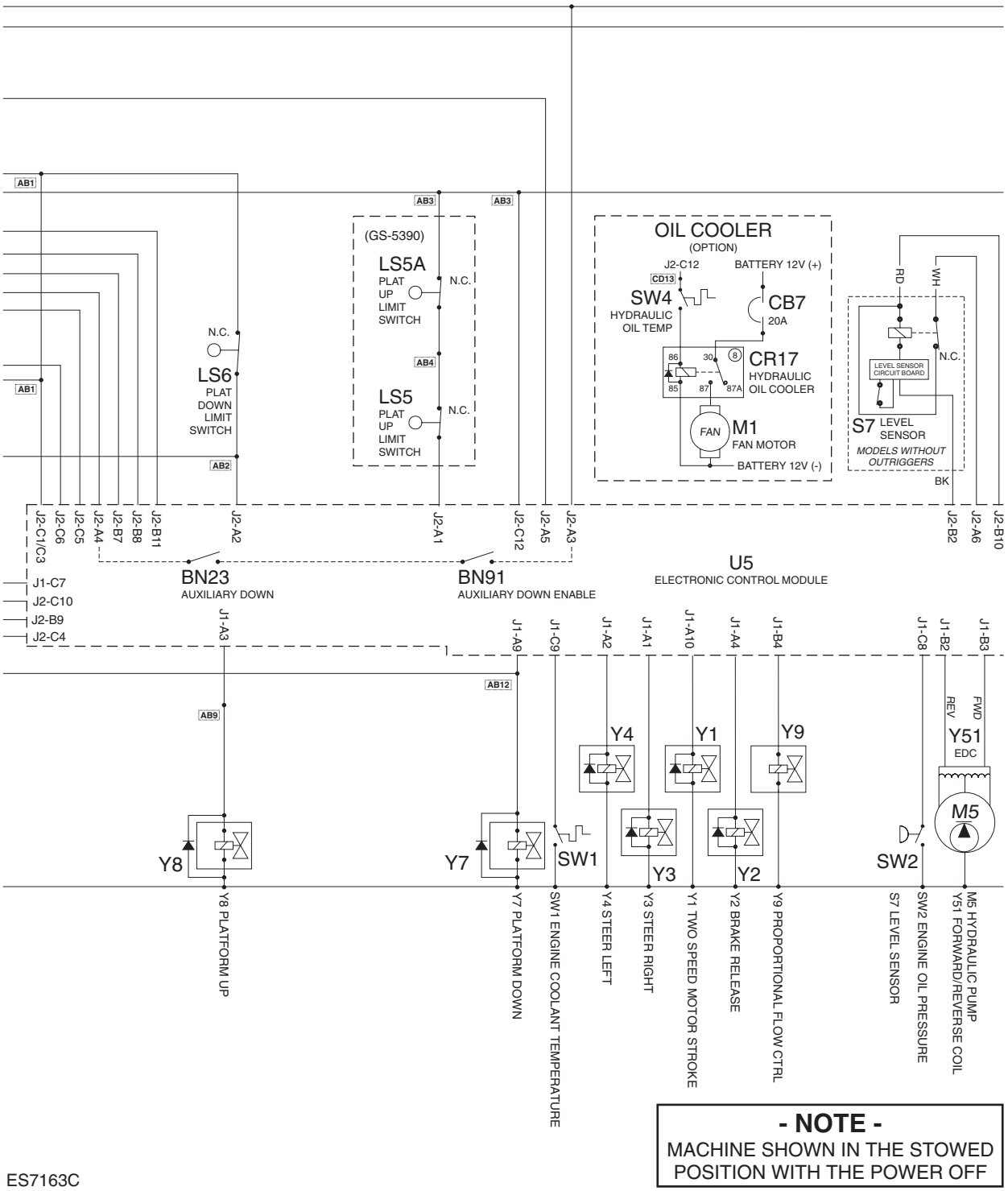
- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES7163C

Electrical Schematic

REV B

ANSI Models with Ford Power
(from serial number GS9004-41694 to GS9005-42143)
Part 2 of 3

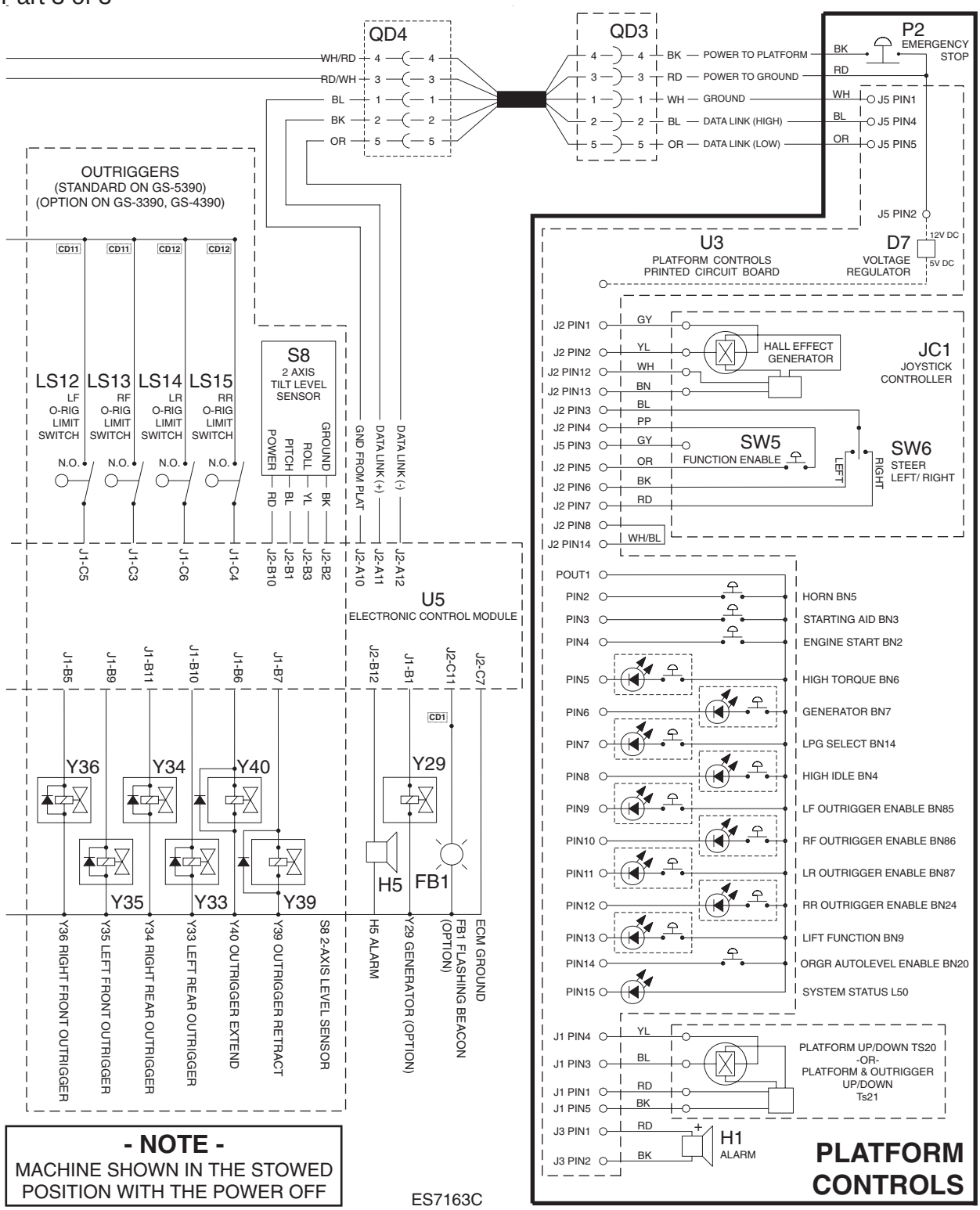


- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES7163C

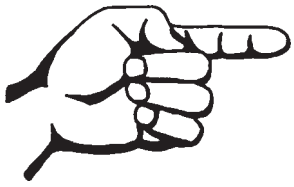
Electrical Schematic

ANSI Models with Ford Power REV B
(from serial number GS9004-41694 to GS9005-42143)
Part 3 of 3



- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES7163C



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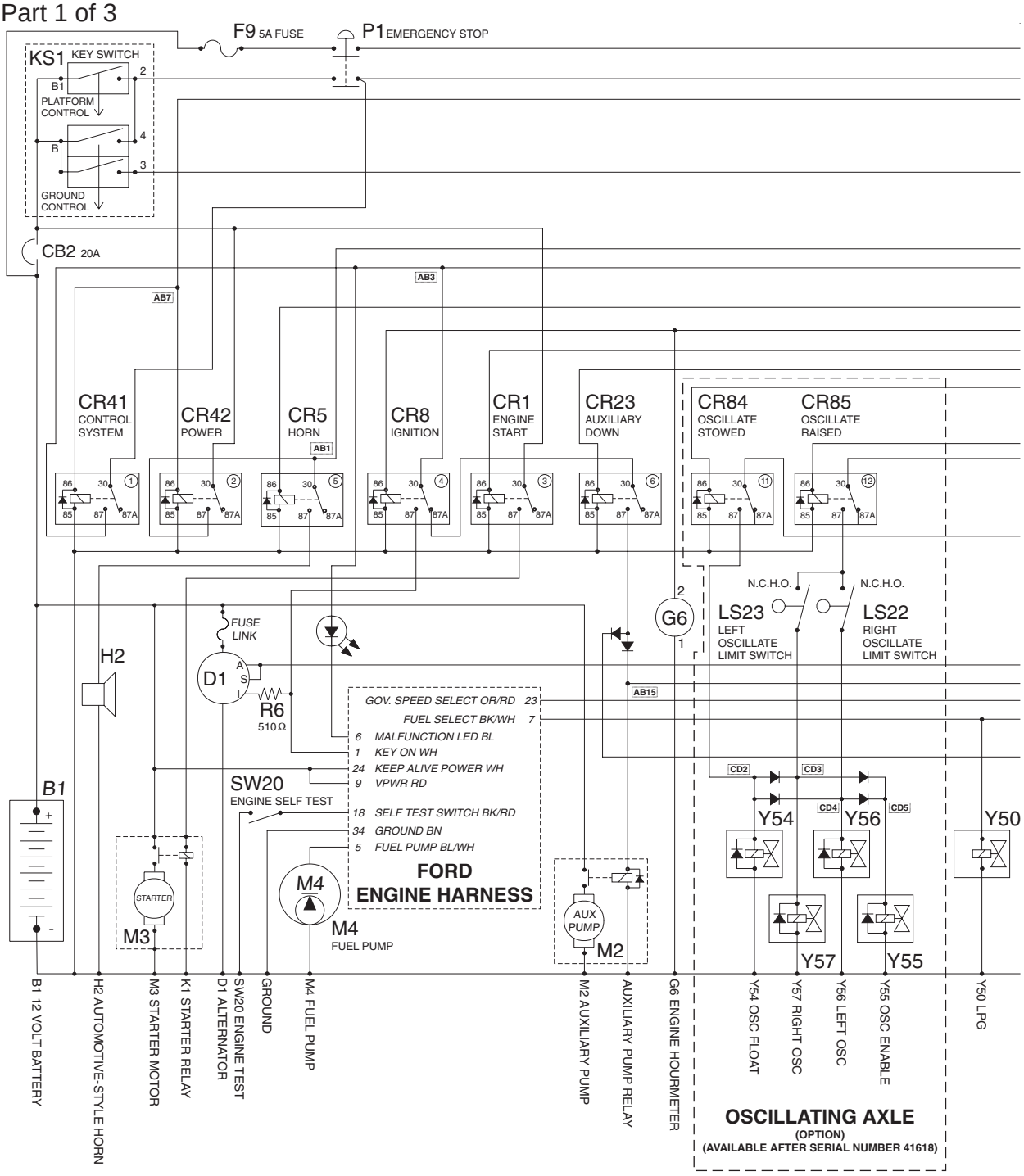
Electrical Schematic

ANSI Models with Ford Power
(after serial number GS9005-42143)
Part 1 of 3

REV A



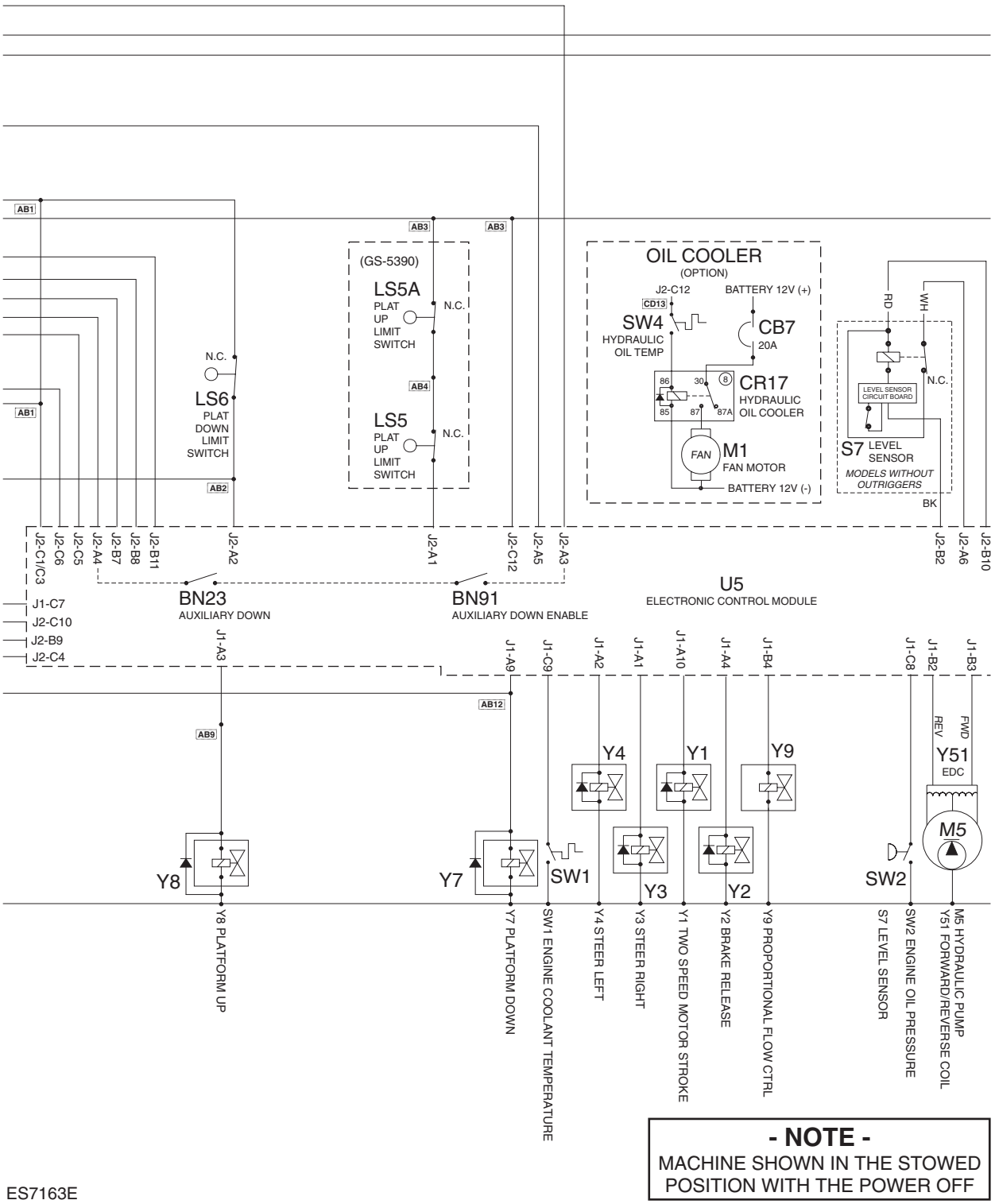
- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES7163E

Electrical Schematic

REV A

ANSI Models with Ford Power
(after serial number GS9005-42143)
Part 2 of 3



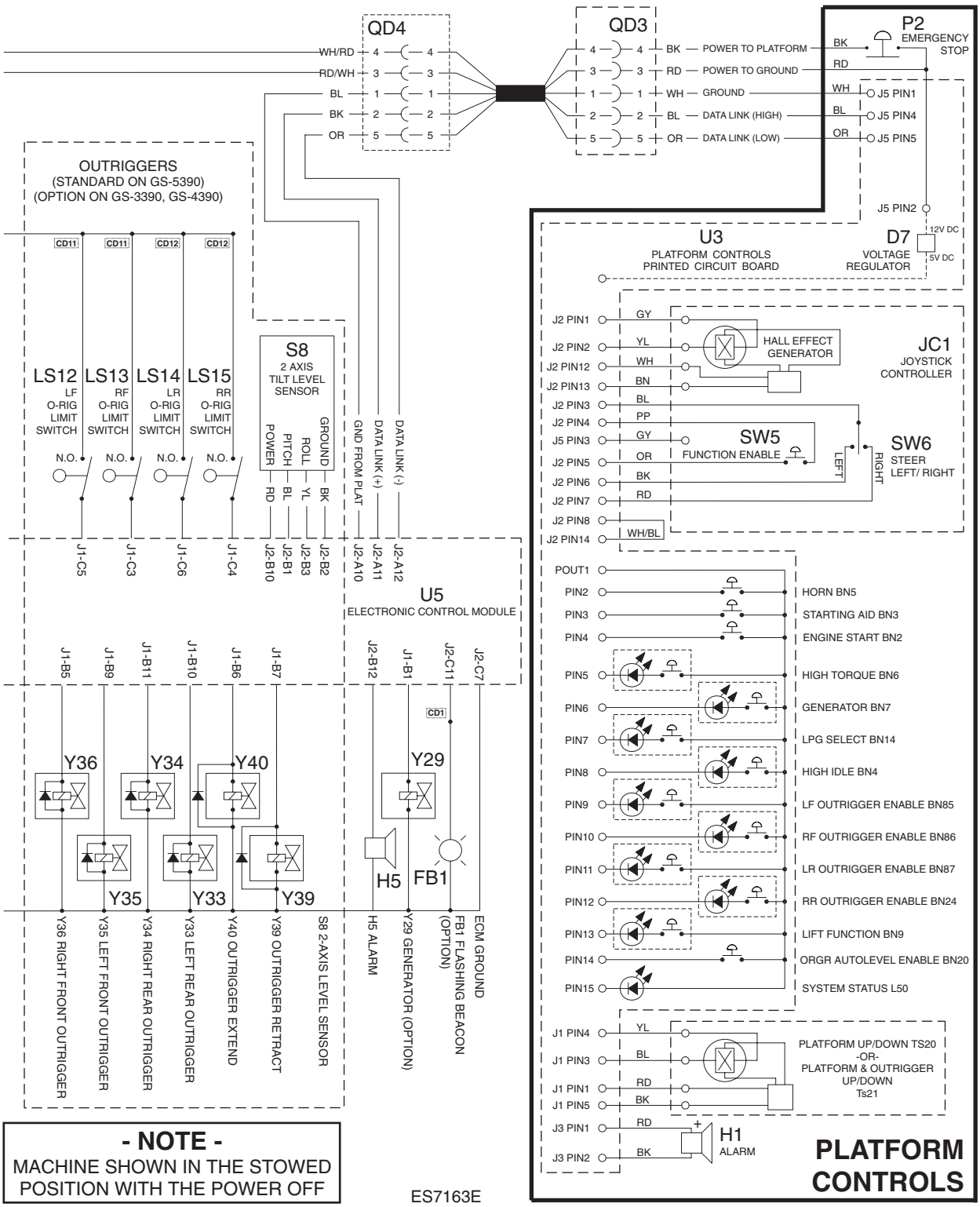
- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

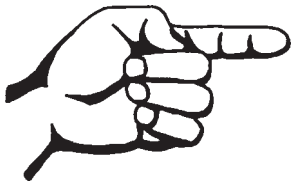
ES7163E

Electrical Schematic

ANSI Models with Ford Power
(after serial number GS9005-42143)
Part 3 of 3

REV A





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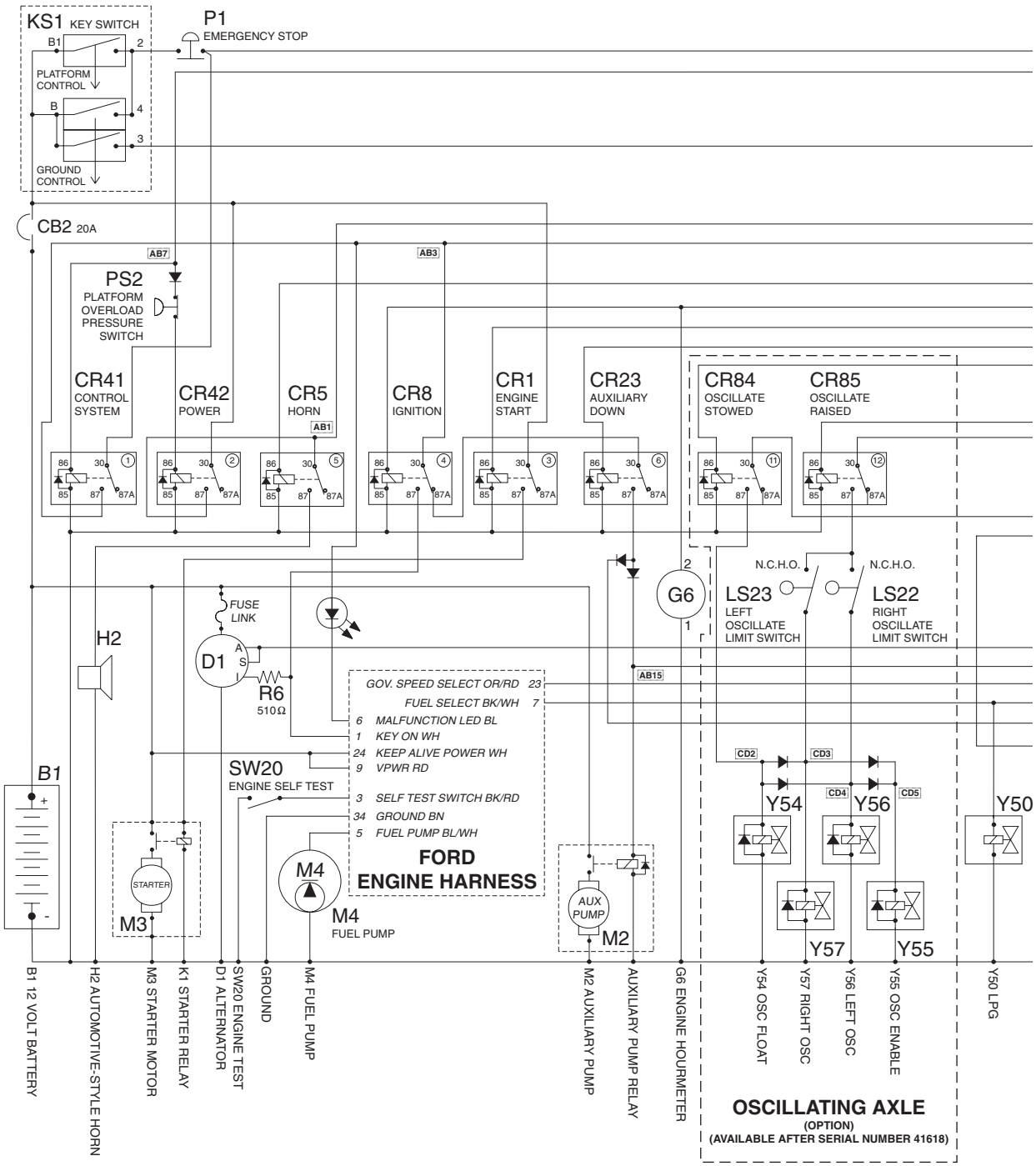
Electrical Schematic

CE Models with Ford Power REV A
(from serial number GS9003-41523 to GS9004-41693)
Part 1 of 3



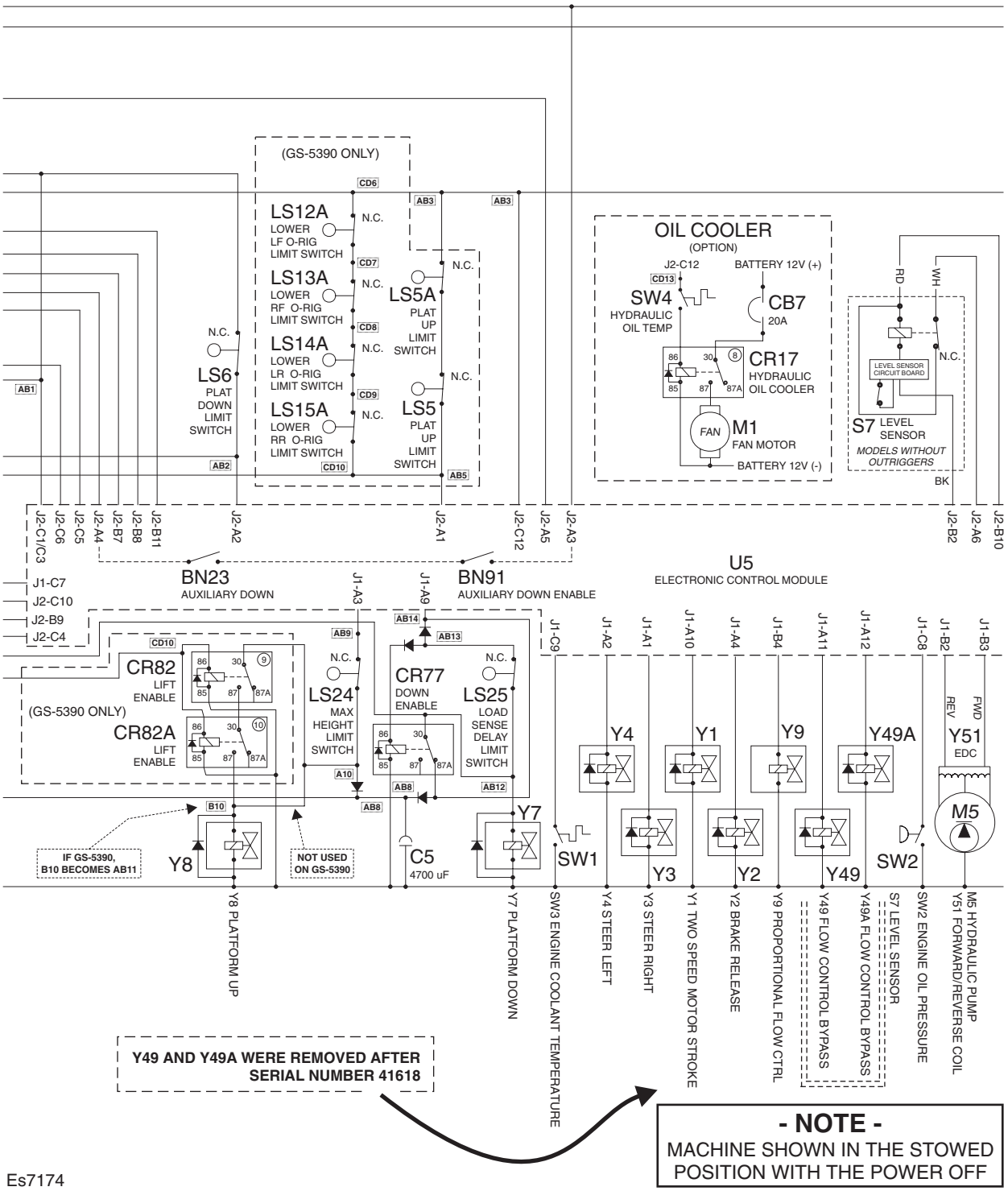
- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

Es7174

Electrical Schematic

REV A

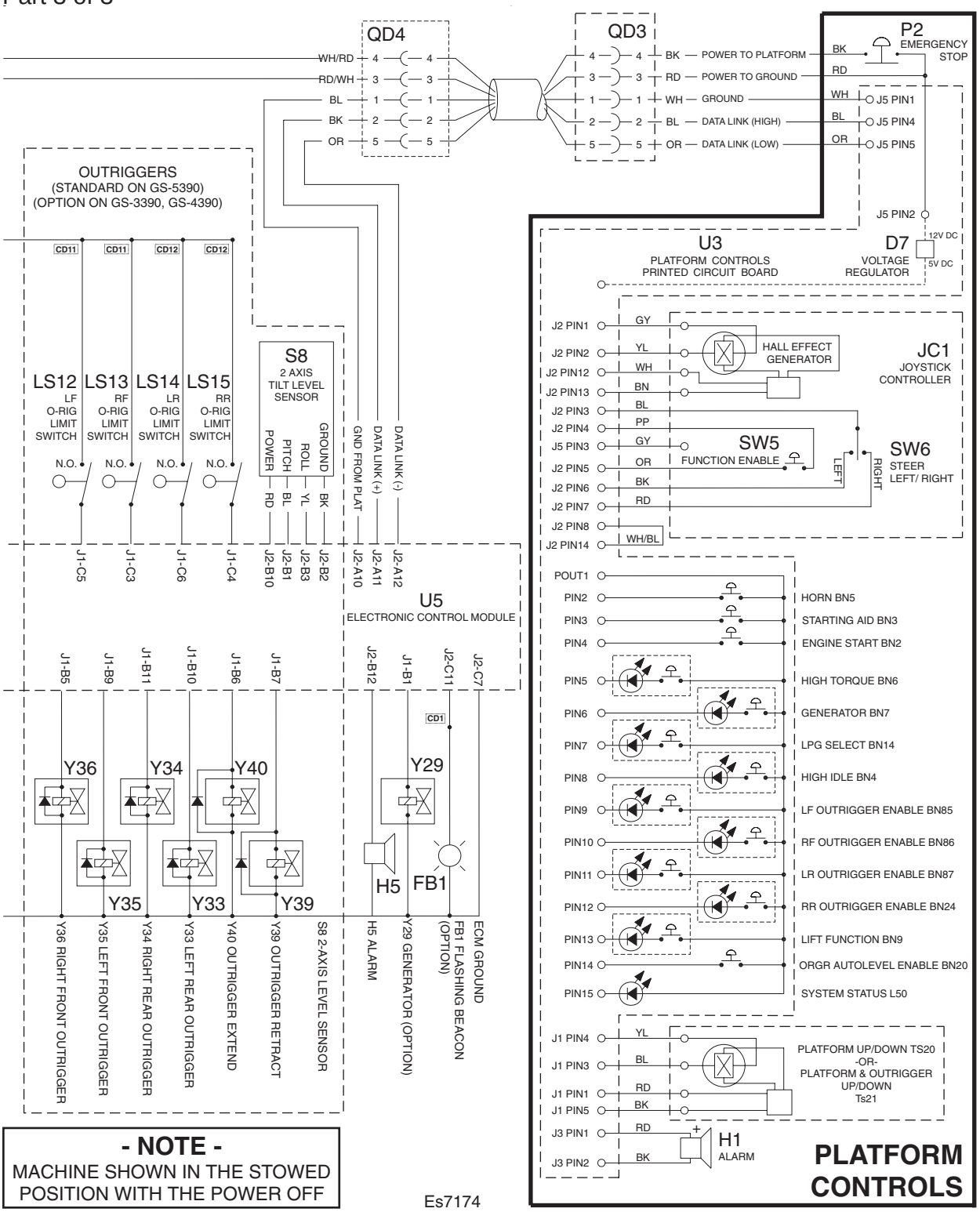
(from serial number GS9003-41523 to GS9004-41693)
Part 2 of 3



Es7174

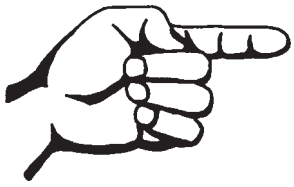
Electrical Schematic

CE Models with Ford Power REV A
(from serial number GS9003-41523 to GS9004-41693)
Part 3 of 3



- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

Es7174



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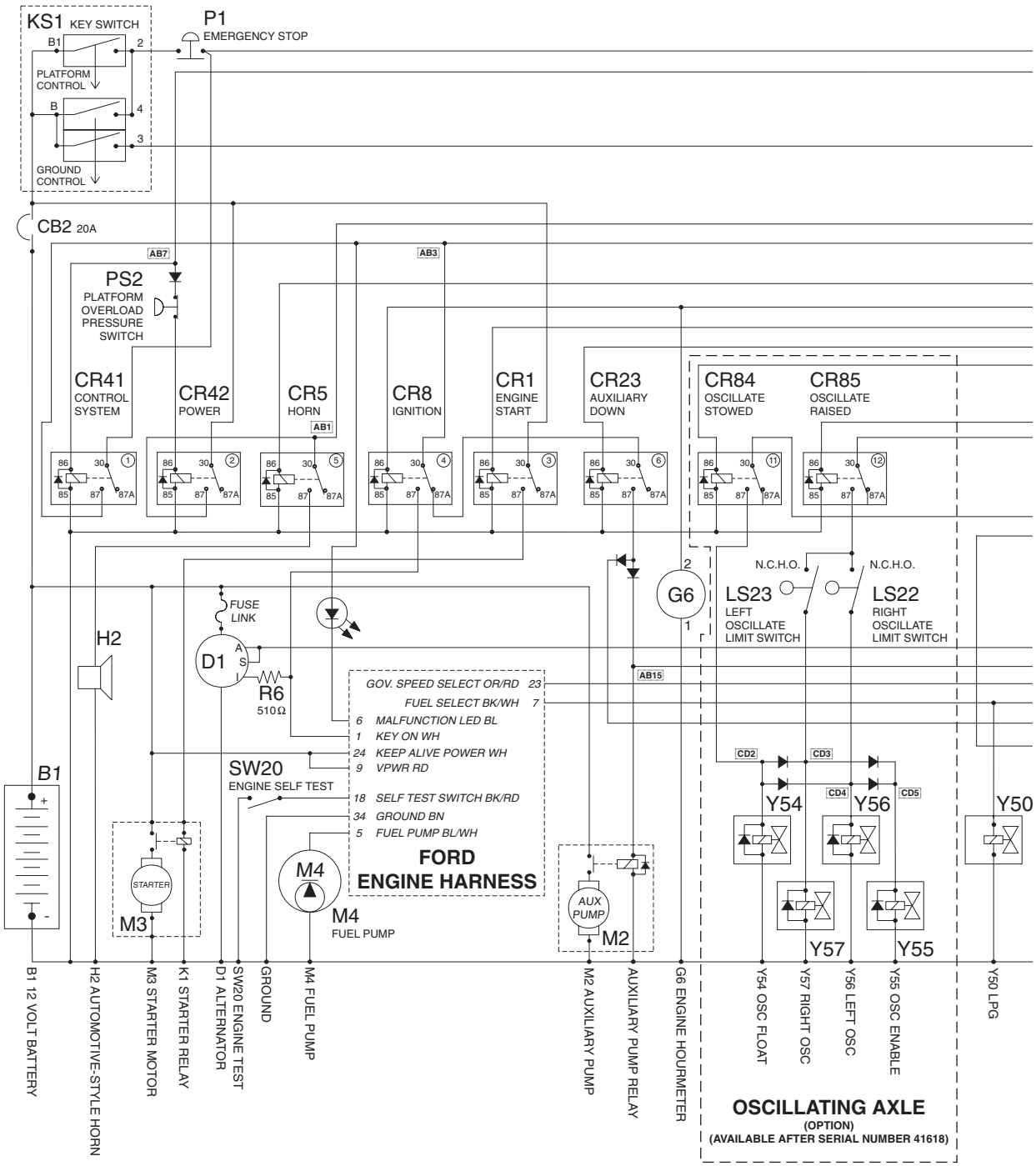
Electrical Schematic

CE Models with Ford Power REV A
(from serial number GS9004-41694 to GS9005-42143)
Part 1 of 3



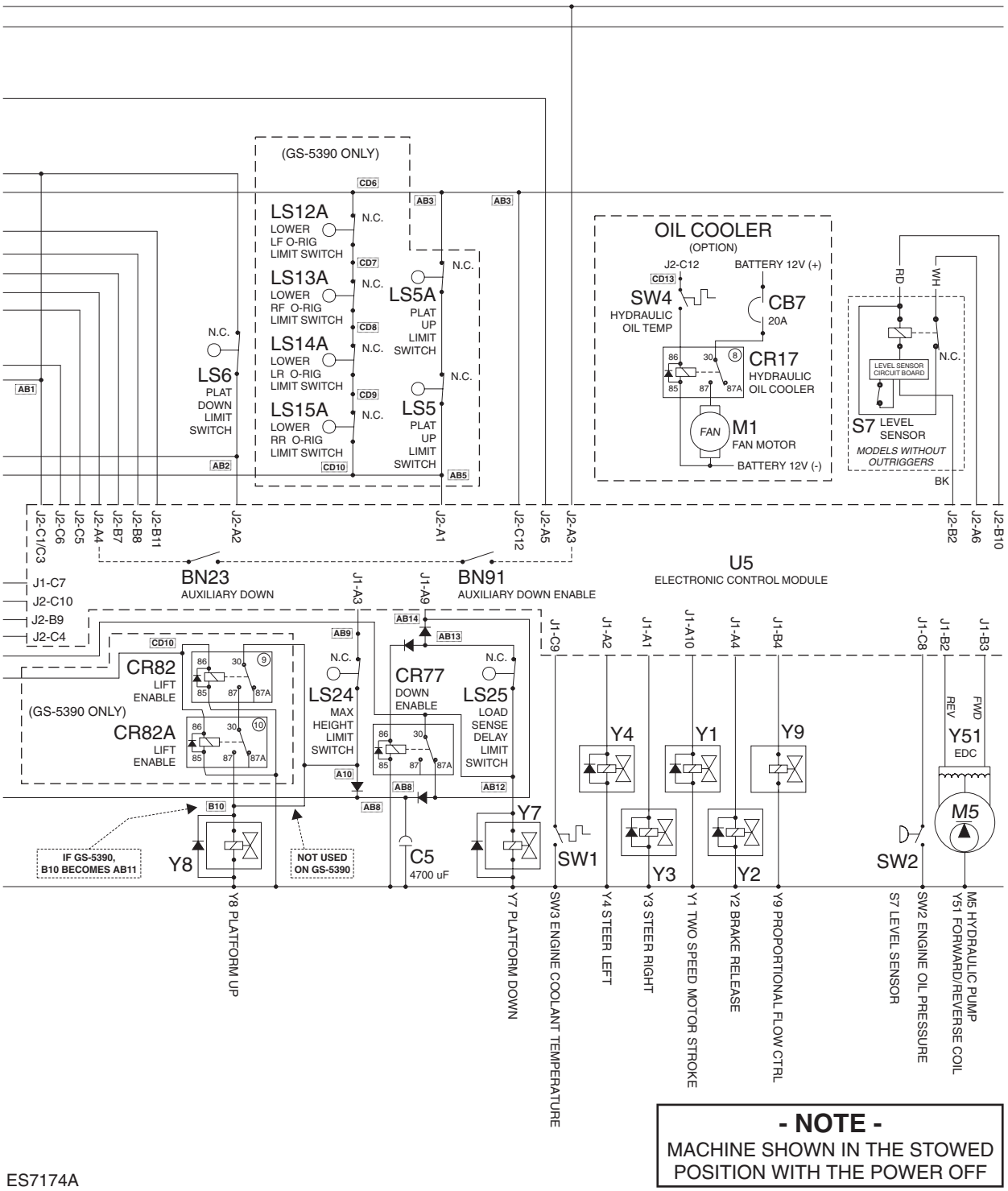
- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES7174A

Electrical Schematic

REV A

CE Models with Ford Power
(from serial number GS9004-41694 to GS9005-42143)
Part 2 of 3

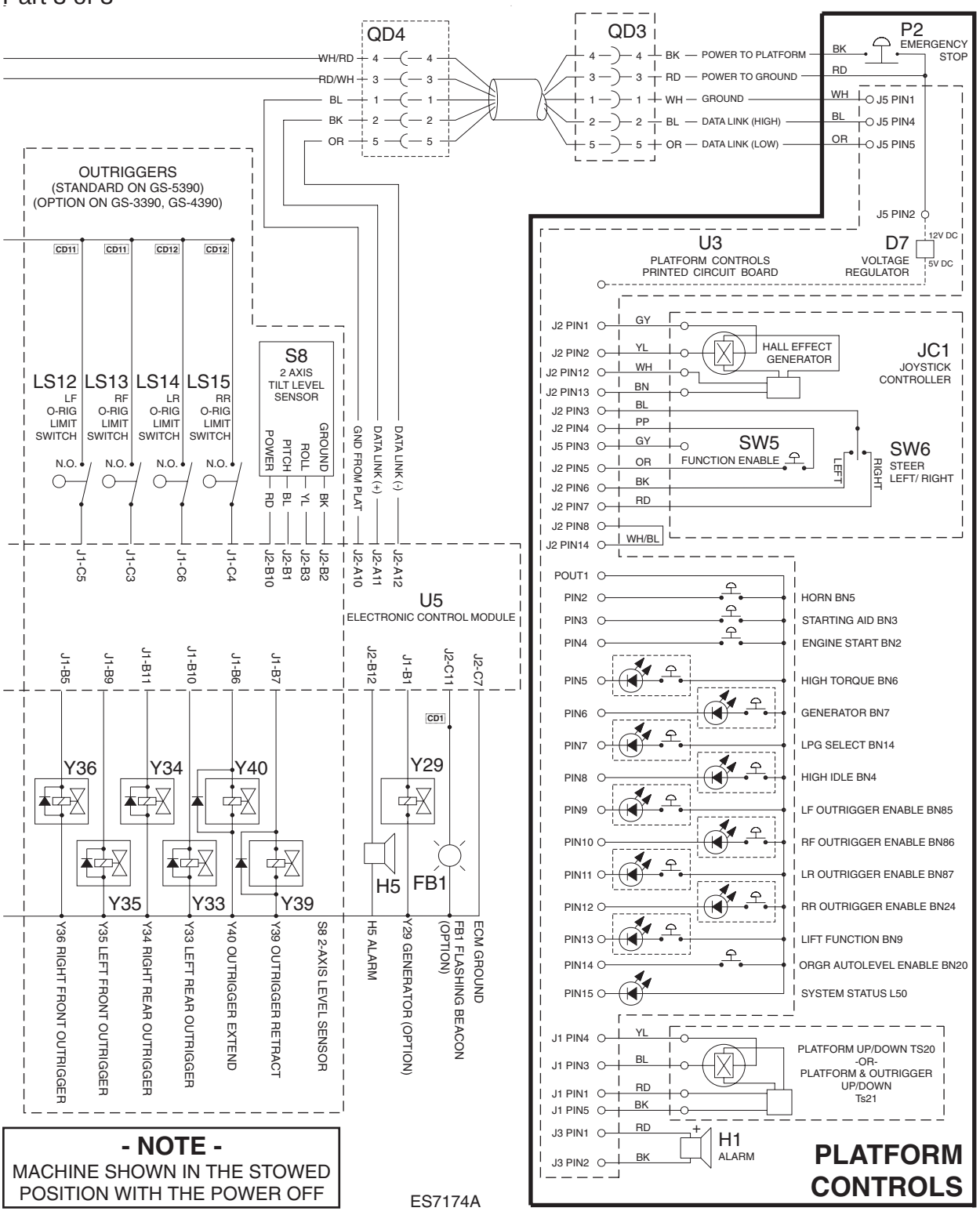


- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES7174A

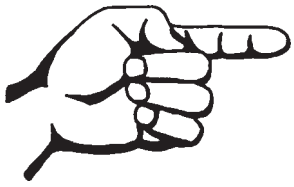
Electrical Schematic

CE Models with Ford Power REV A
(from serial number GS9004-41694 to GS9005-42143)
Part 3 of 3



- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES7174A



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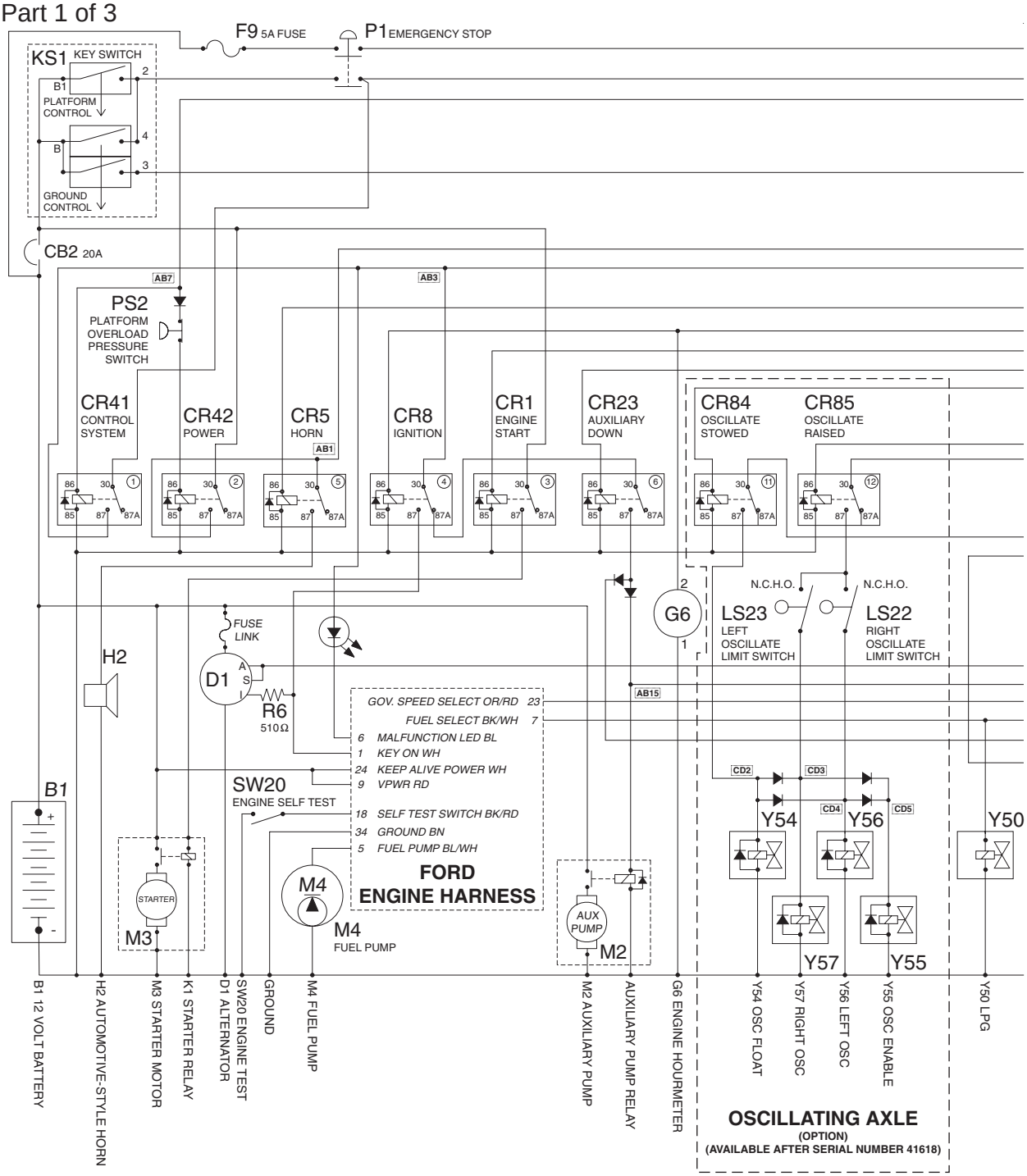
Electrical Schematic

CE Models with Ford Power
(after serial number GS9005-42143)
Part 1 of 3

REV A



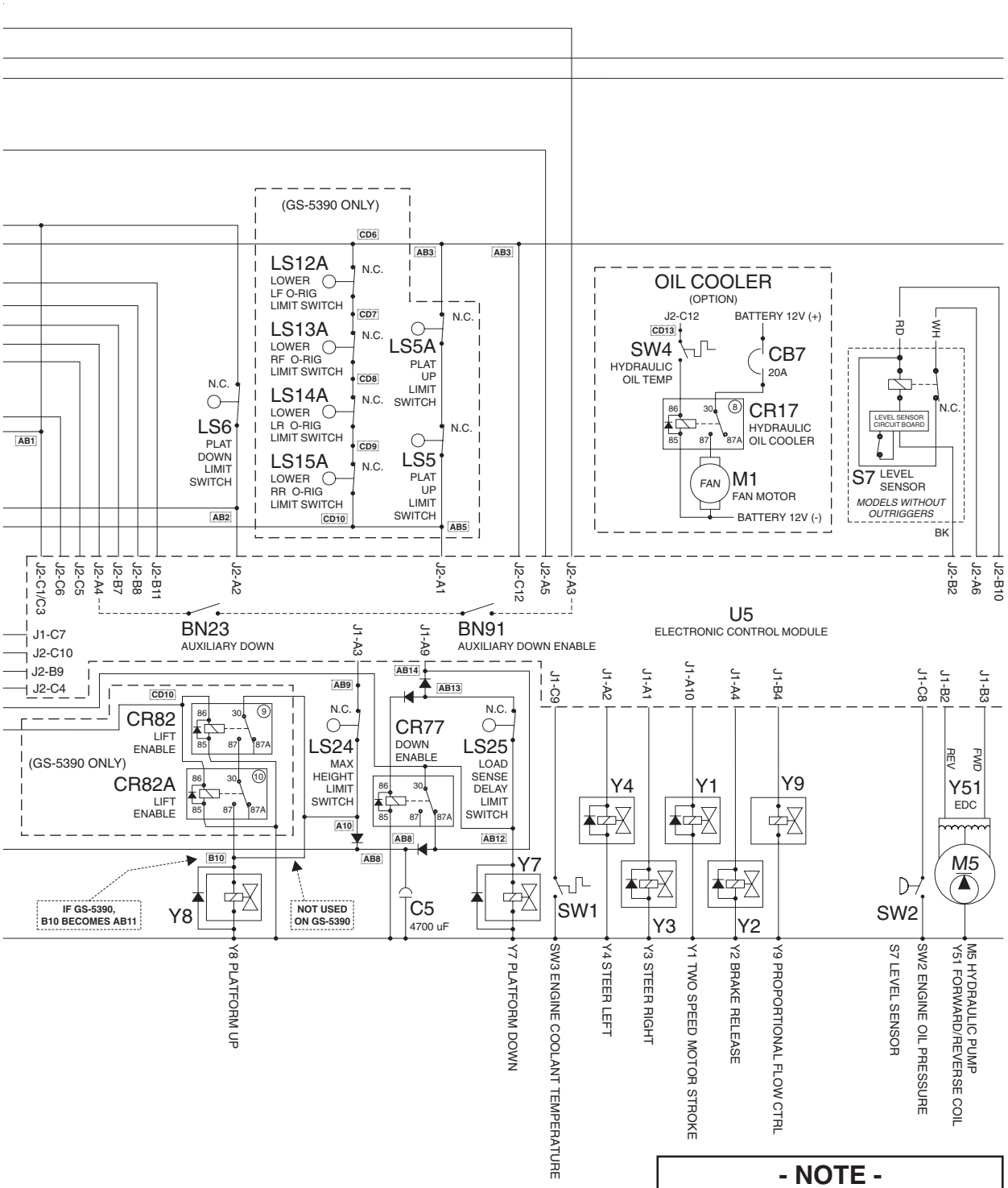
- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES7174B

Electrical Schematic

REV A

(after serial number GS9005-42143)
Part 2 of 3



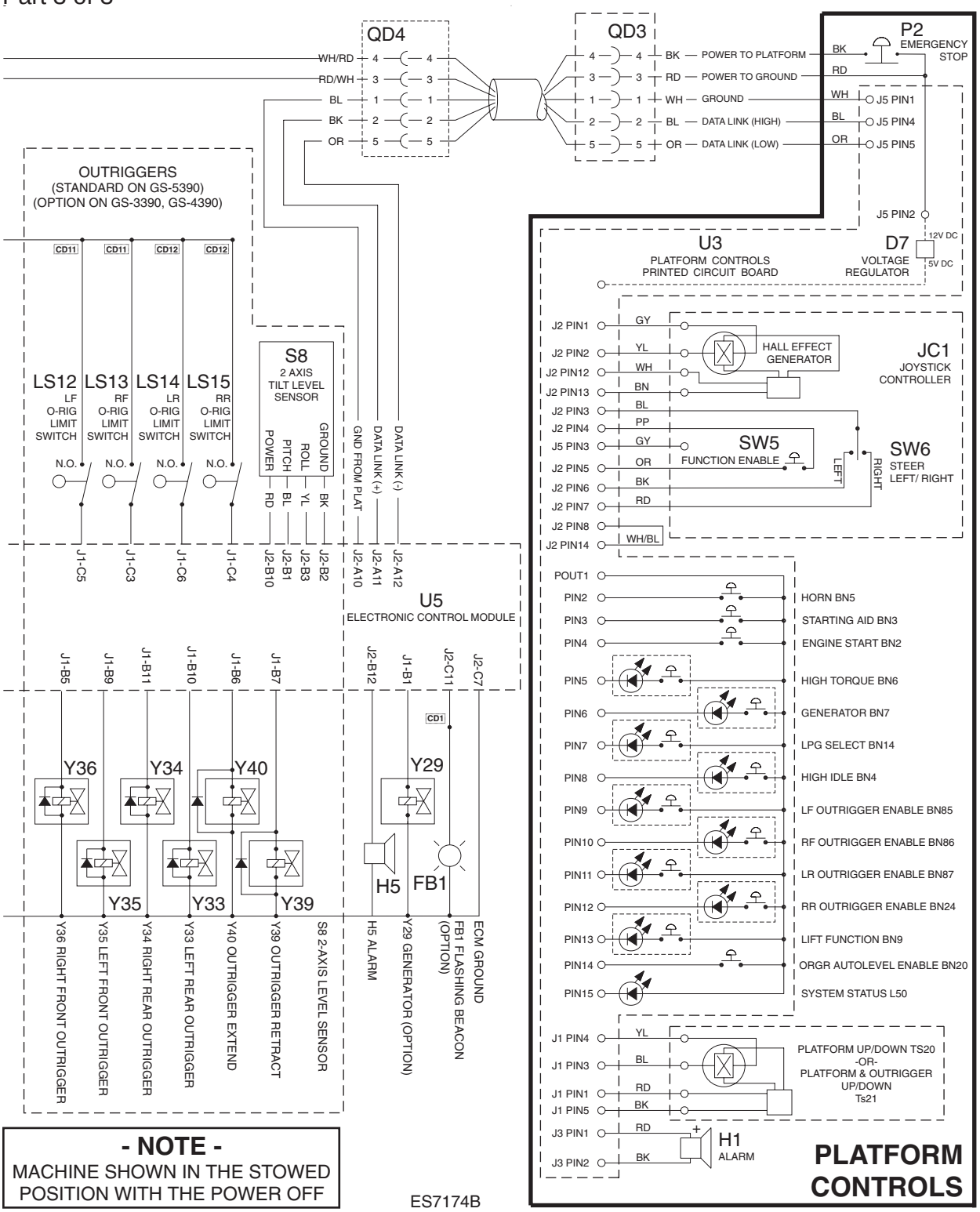
- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES7174B

Electrical Schematic

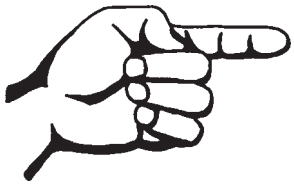
CE Models with Ford Power
(after serial number GS9005-42143)
Part 3 of 3

REV A



- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES7174B



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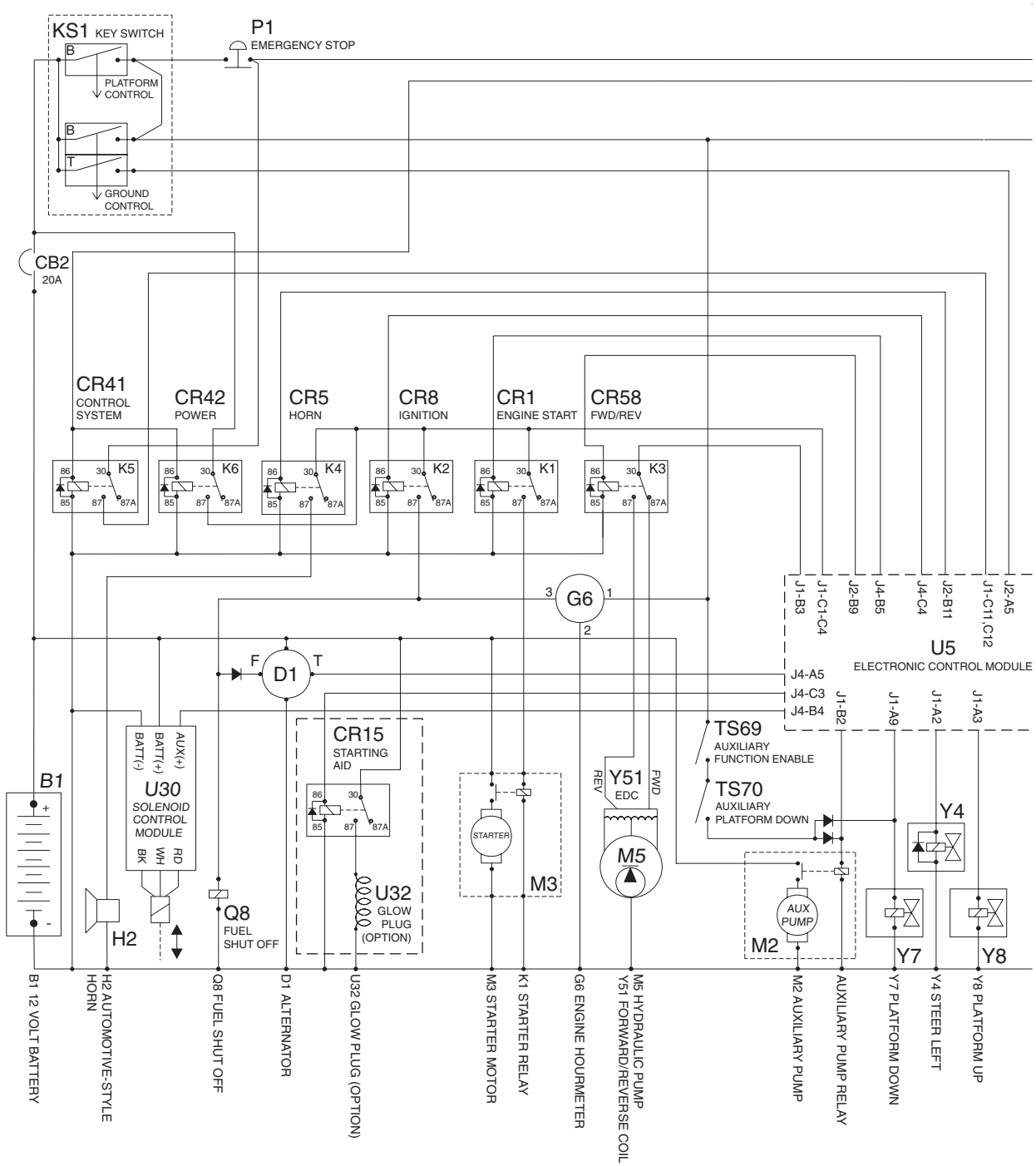
Electrical Schematic

Deutz Models (before serial number 40428) REV C

Part 1 of 3



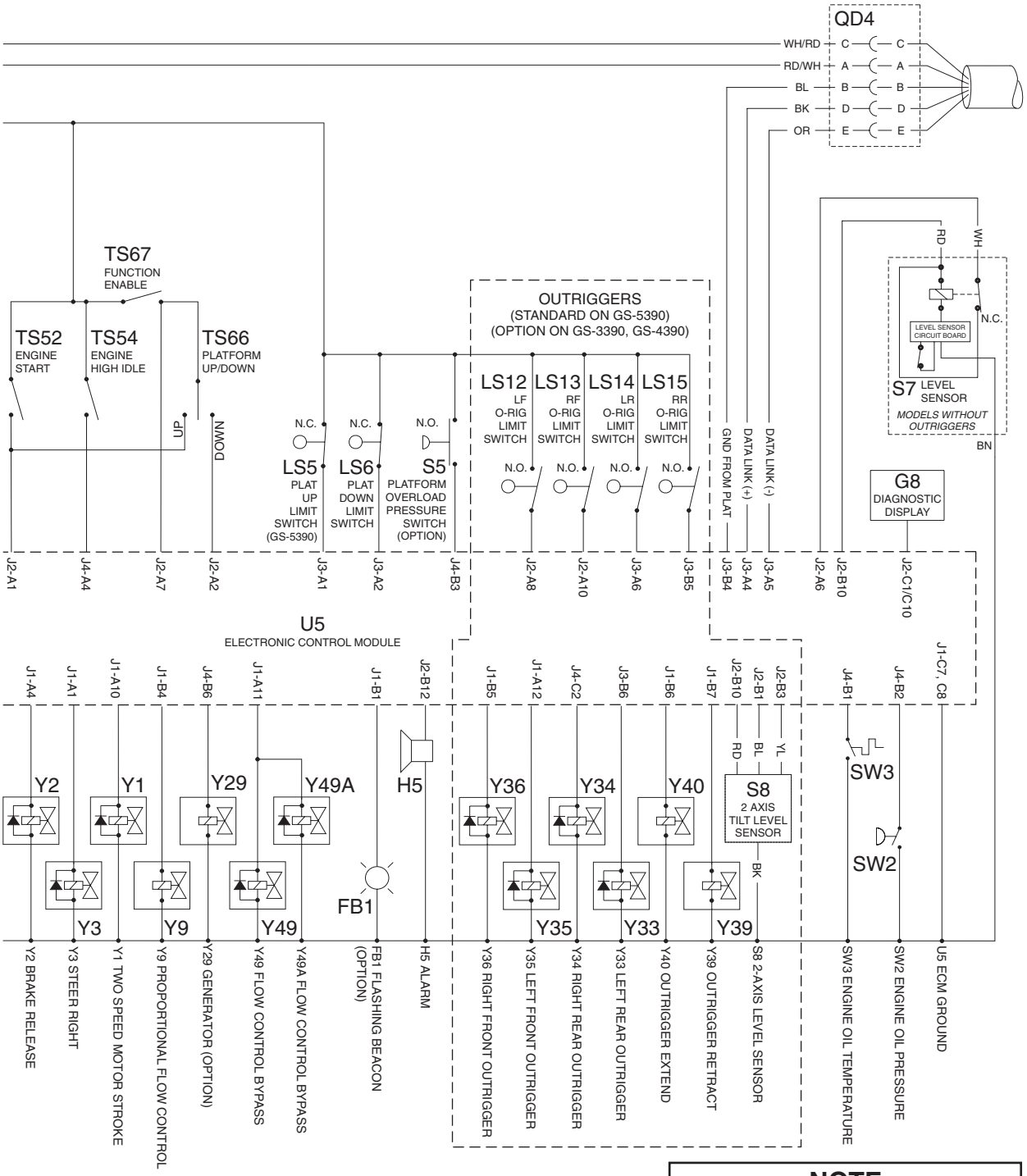
- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES7142A

Electrical Schematic

REV C

Deutz Models (before serial number 40428)
Part 2 of 3

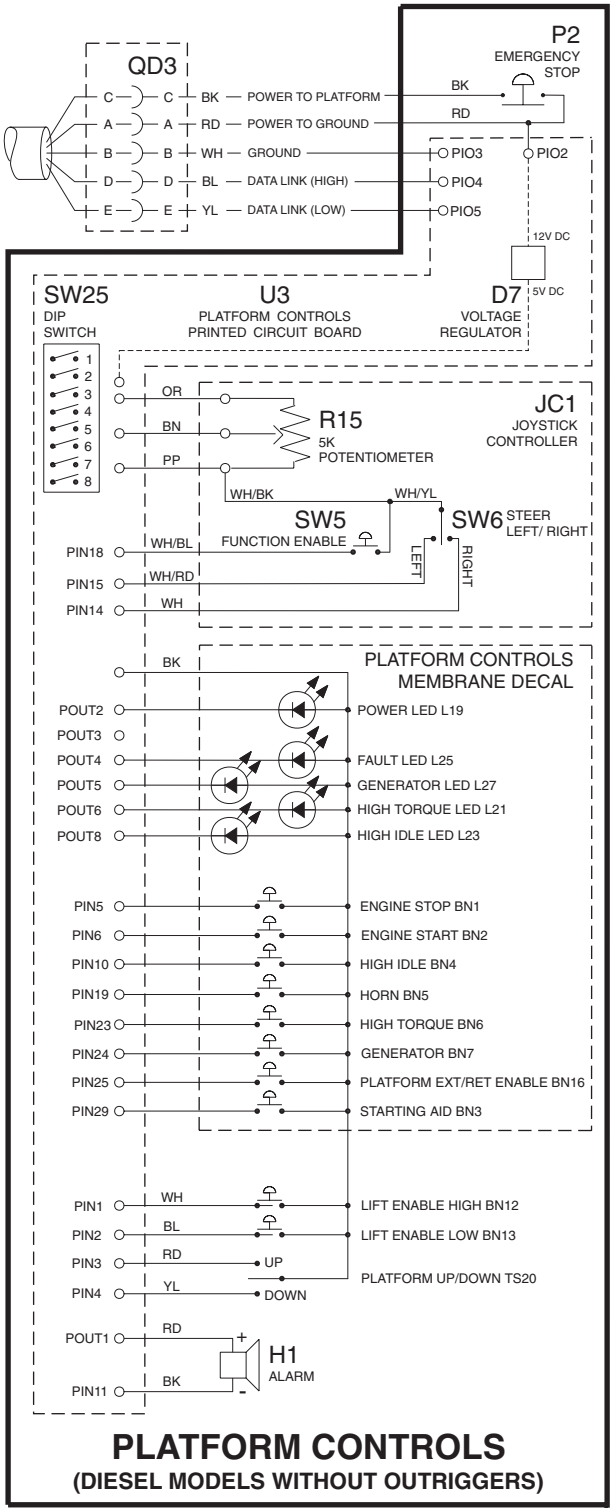


- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

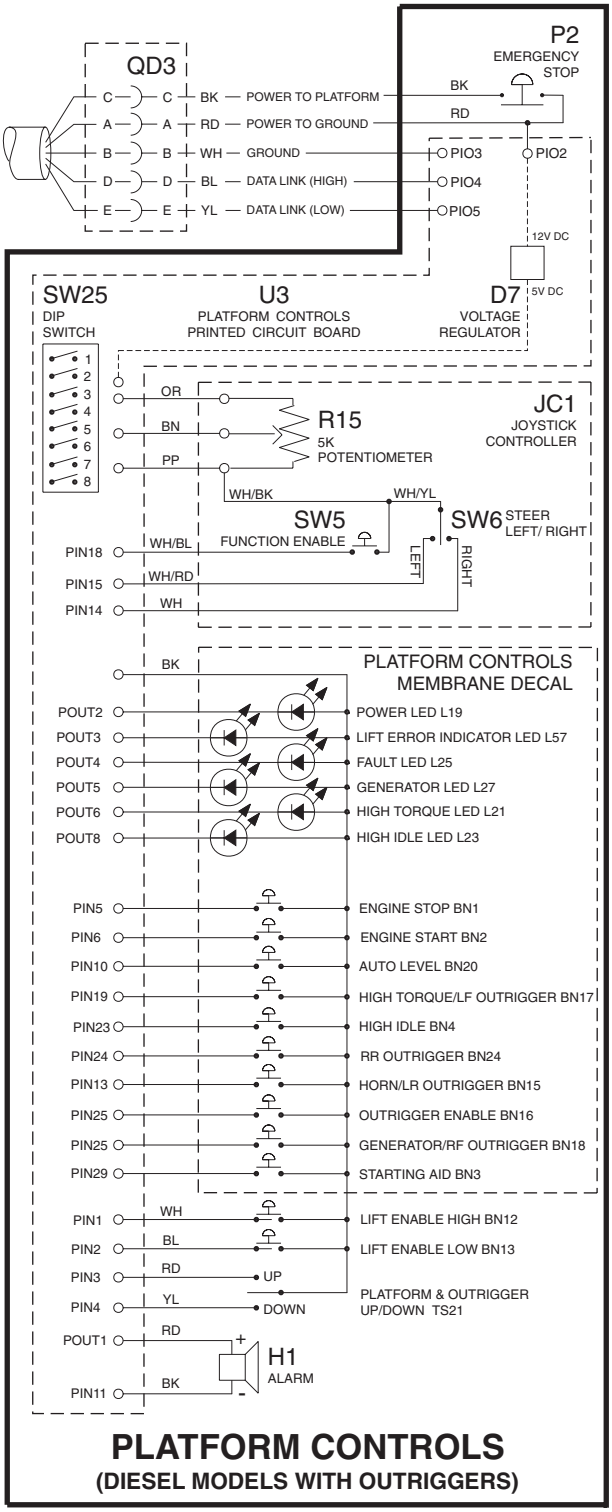
ES7142A

Electrical Schematic

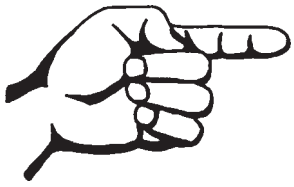
Deutz Models (before serial number 40428) REV C
Part 3 of 3



PLATFORM CONTROLS
(DIESEL MODELS WITHOUT OUTRIGGERS)



PLATFORM CONTROLS
(DIESEL MODELS WITH OUTRIGGERS)



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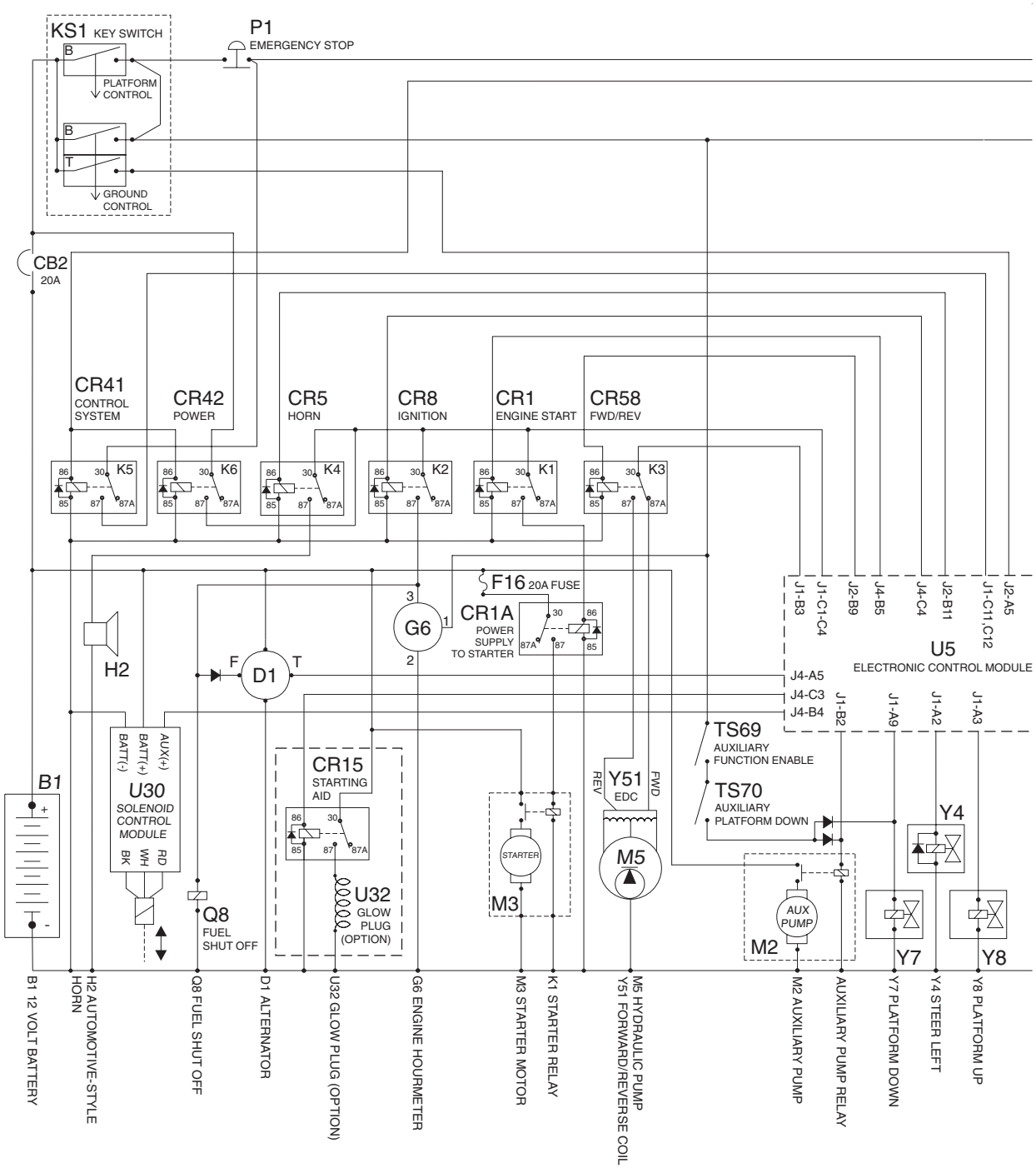
Electrical Schematic

Deutz Models (from serial number 40428 to 40737) REV D

Part 1 of 3



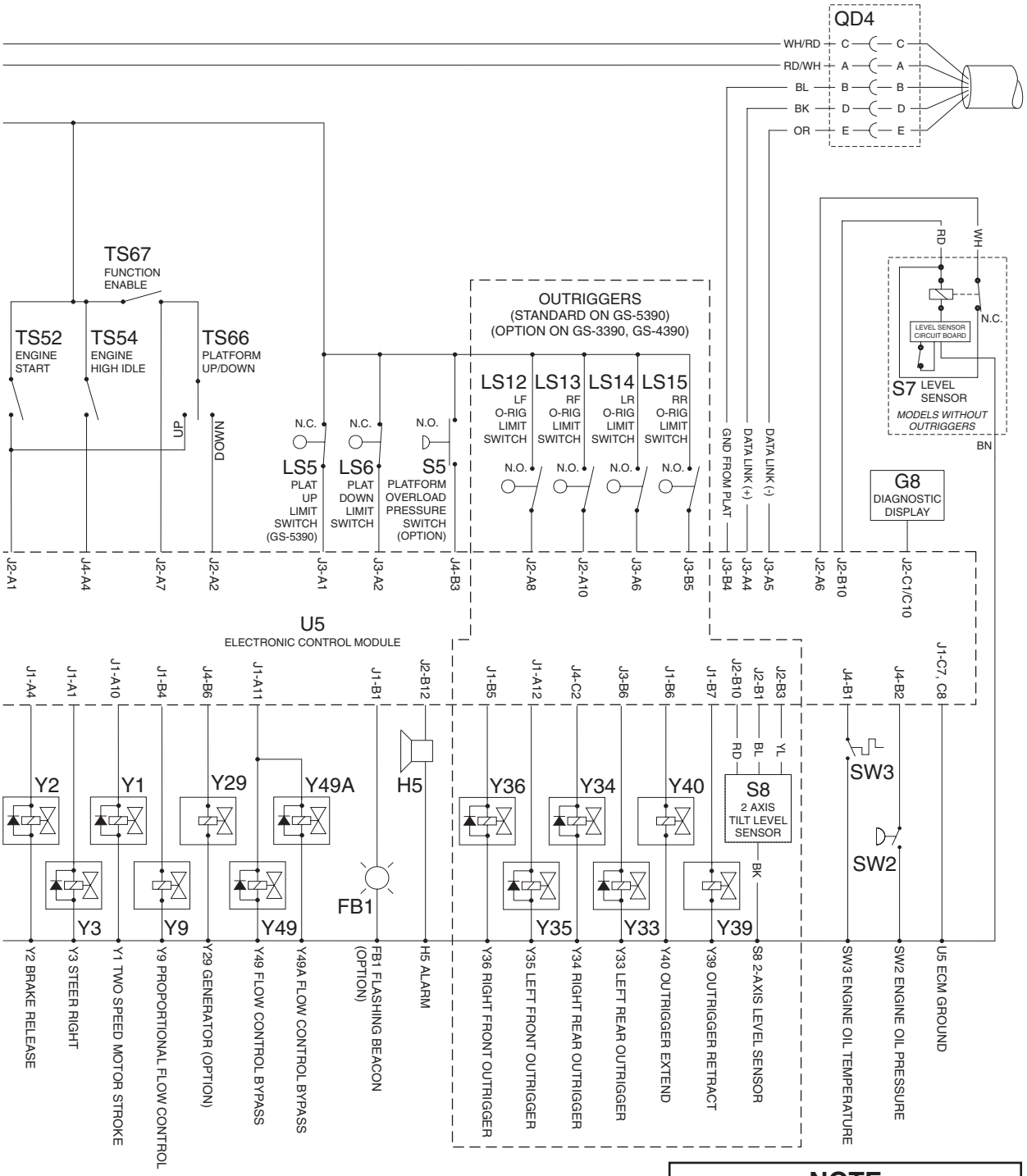
- NOTE -

MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

Electrical Schematic

REV D

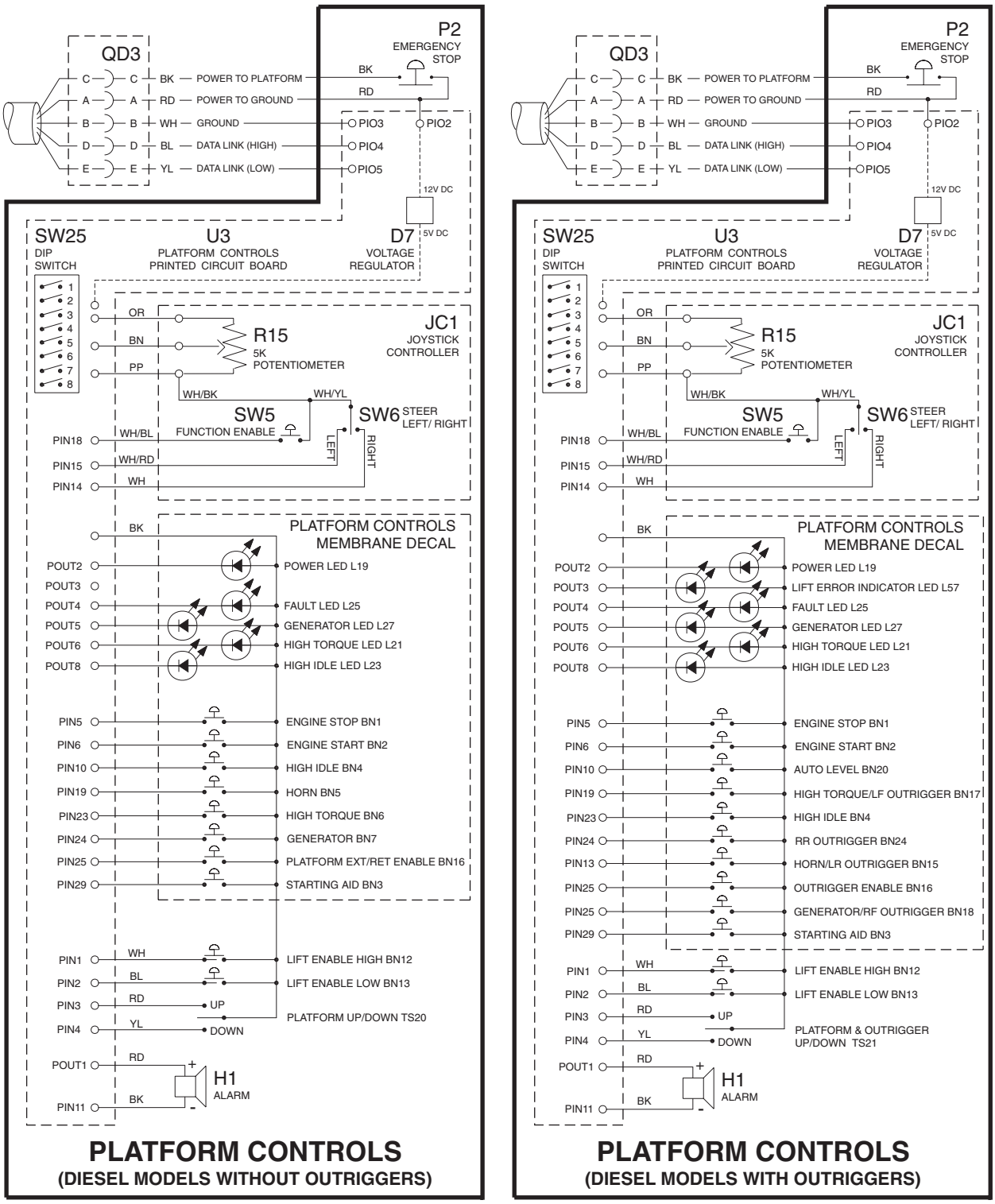
Deutz Models (from serial number 40428 to 40737)
Part 2 of 3

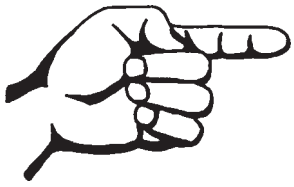


- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

Electrical Schematic

Deutz Models (from serial number 40428 to 40737) REV D
Part 3 of 3





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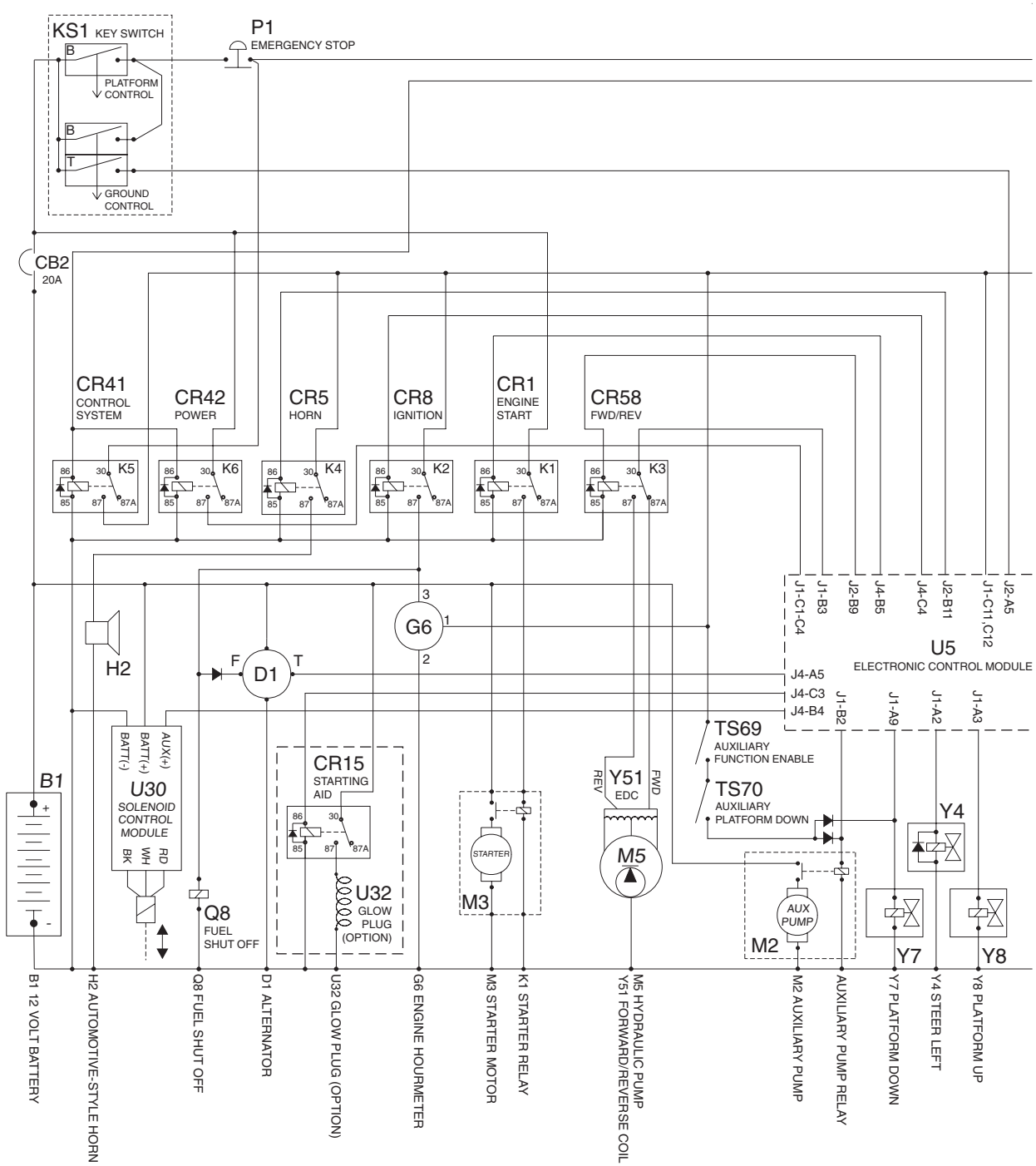
Electrical Schematic

Deutz Models (from serial number 40738 to 40941) REV E

Part 1 of 3



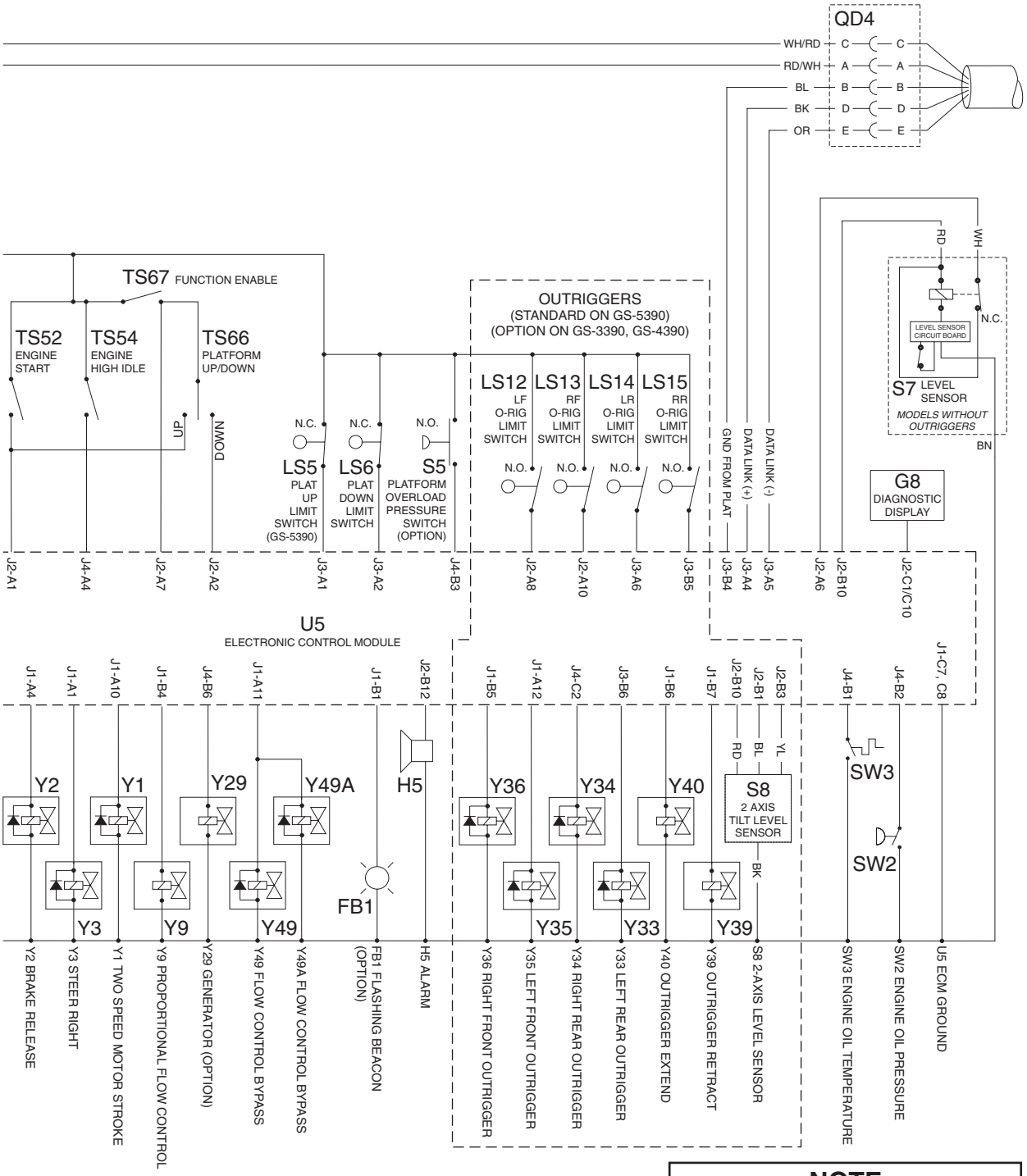
- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES7142B

Electrical Schematic

REV E

Deutz Models (from serial number 40738 to 40941)
Part 2 of 3

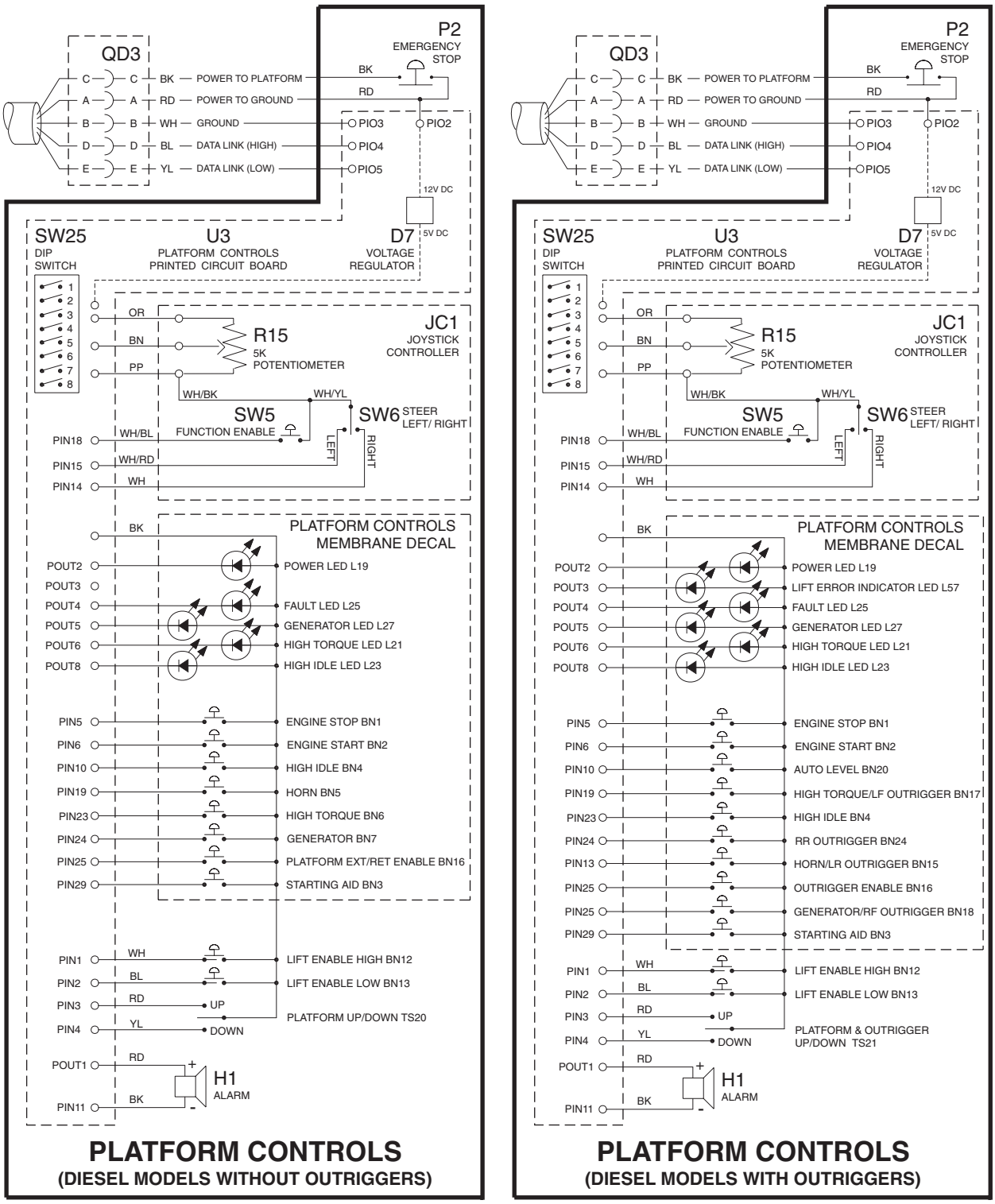


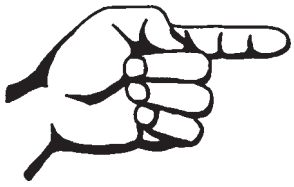
- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES7142B

Electrical Schematic

Deutz Models (from serial number 40738 to 40941) REV E
Part 3 of 3





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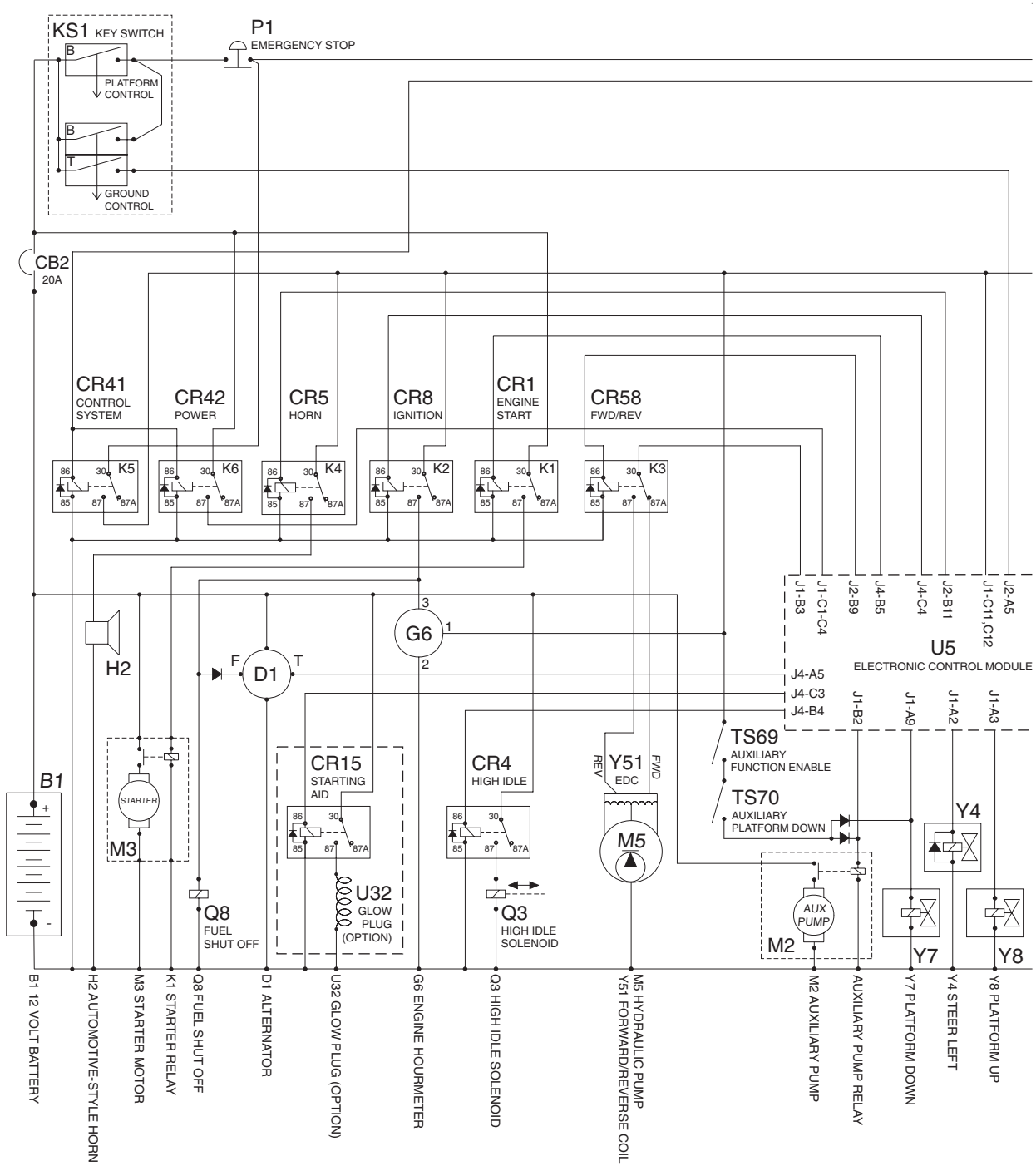
Electrical Schematic

Deutz Models (from serial number 40942 to 41065) REV B

Part 1 of 3



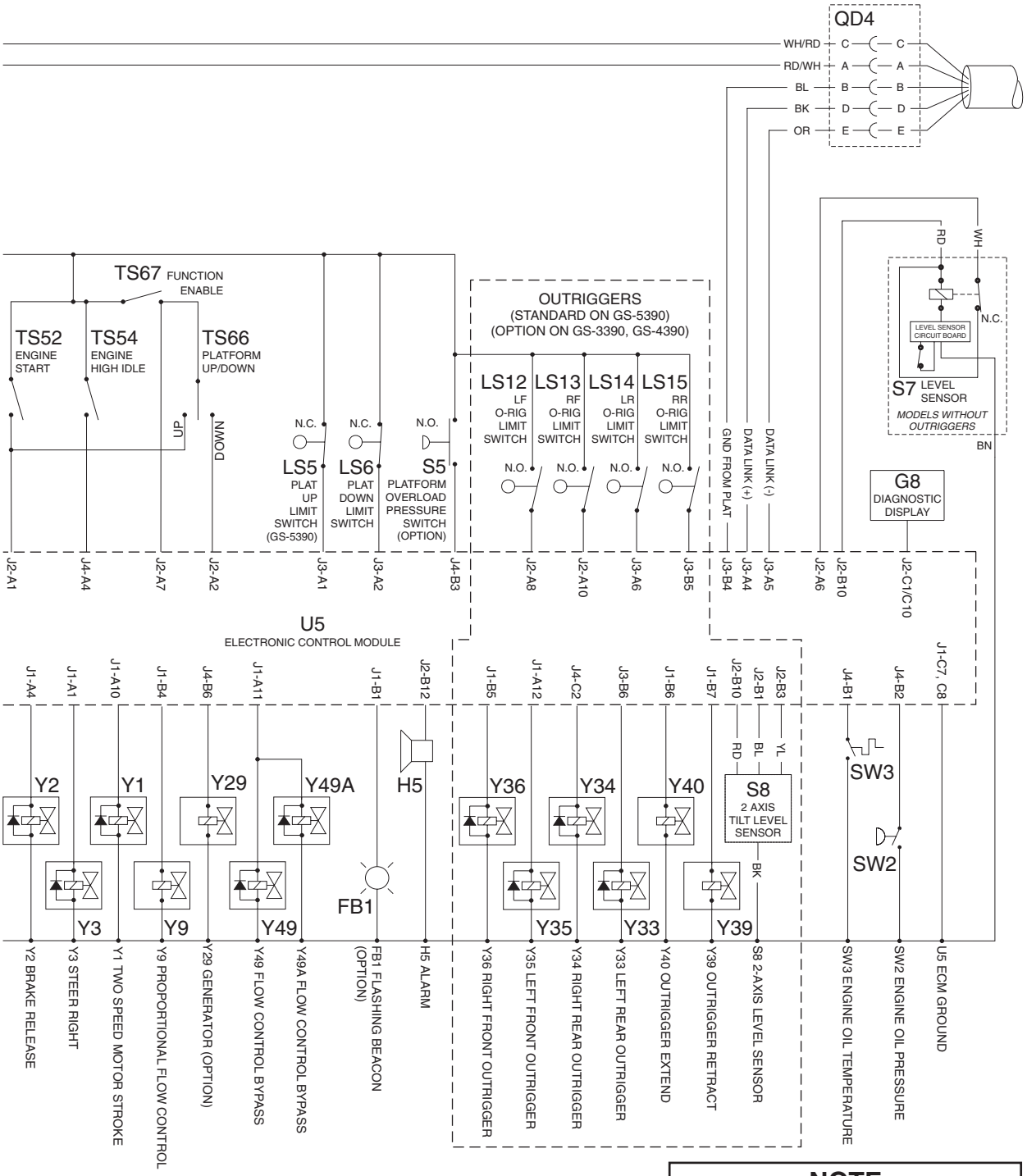
- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES7142C

Electrical Schematic

REV B

Deutz Models (from serial number 40942 to 41065)
Part 2 of 3

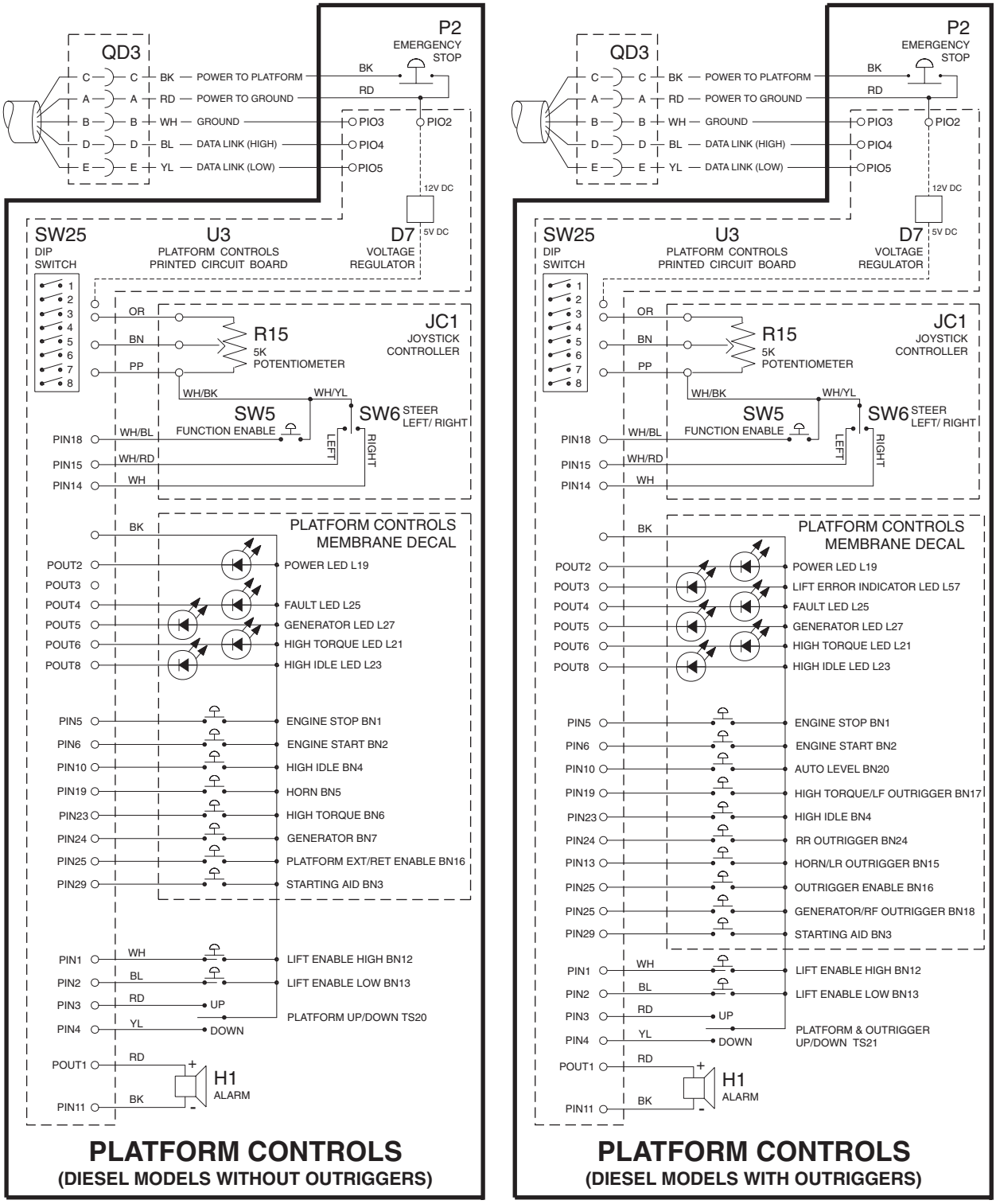


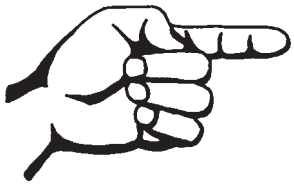
- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES7142C

Electrical Schematic

Deutz Models (from serial number 40942 to 41065) REV B
Part 3 of 3





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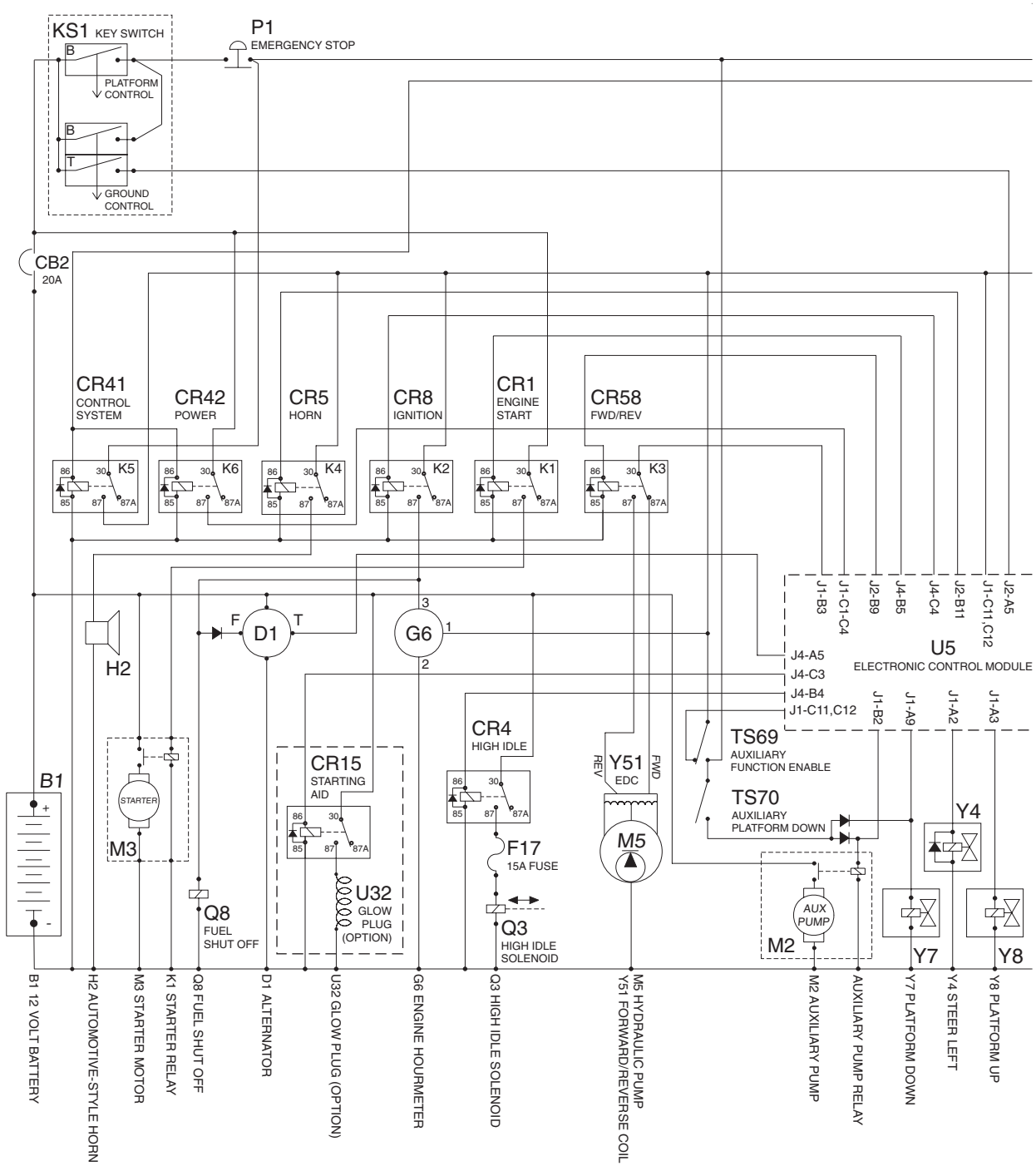
Electrical Schematic

Deutz Models (from serial number 41066 to GS9003-41350) REV A
Part 1 of 3



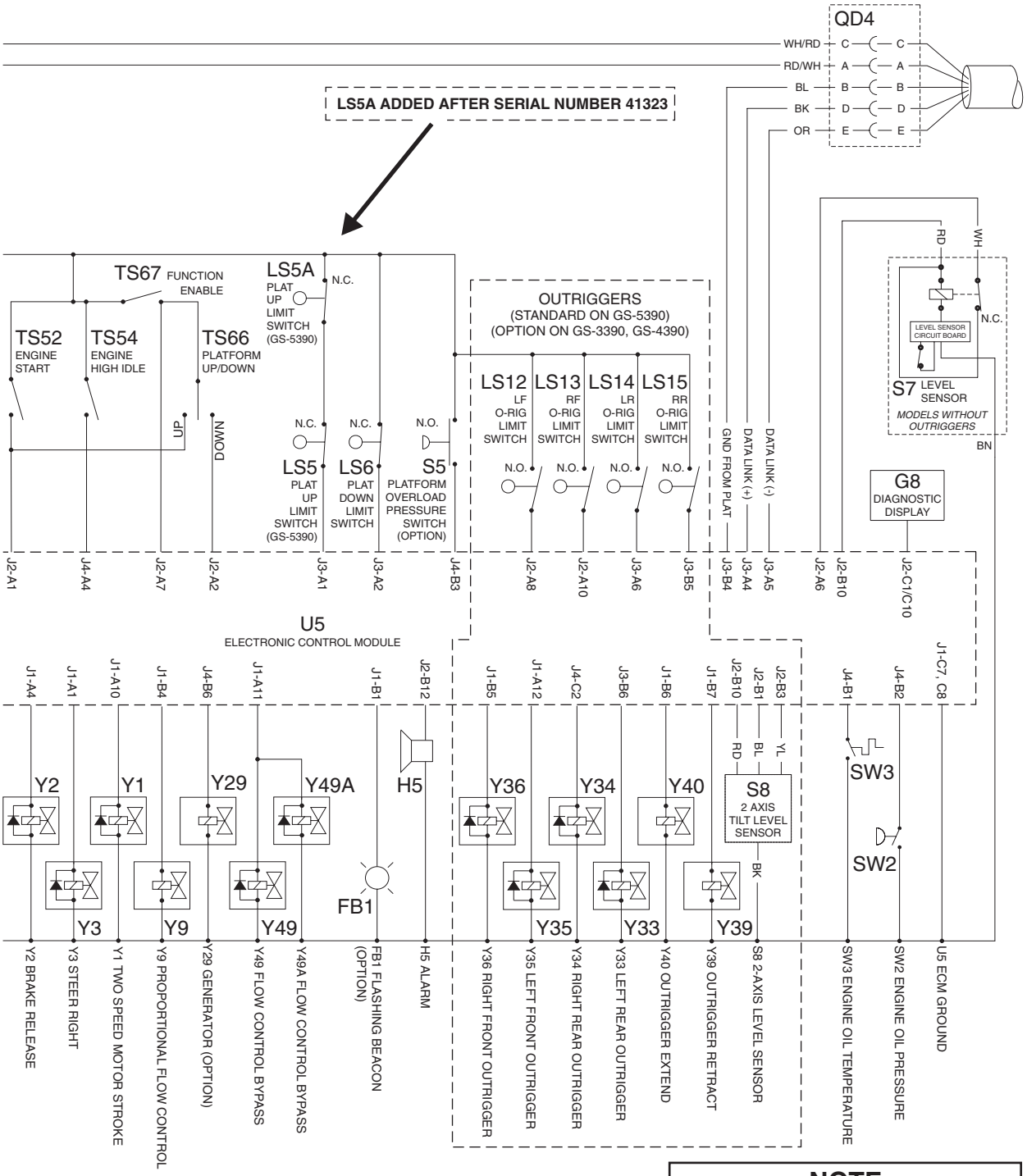
- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES7142D

Electrical Schematic

REV A

Deutz Models (from serial number 41066 to GS9003-41350)
Part 2 of 3

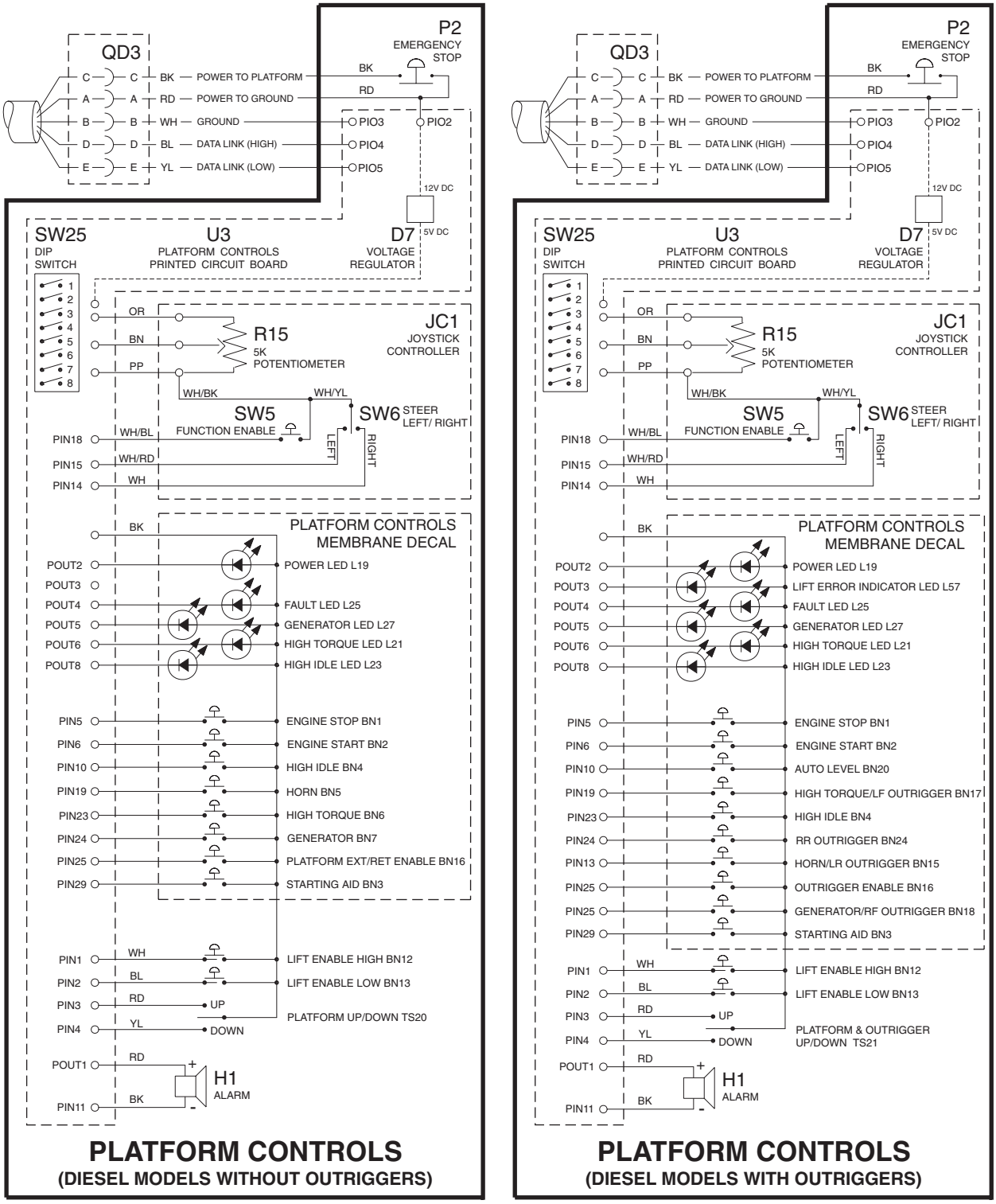


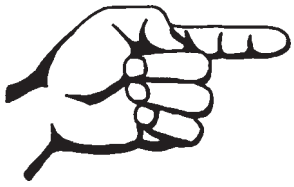
- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES7142D

Electrical Schematic

Deutz Models (from serial number 41066 to GS9003-41350)
Part 3 of 3





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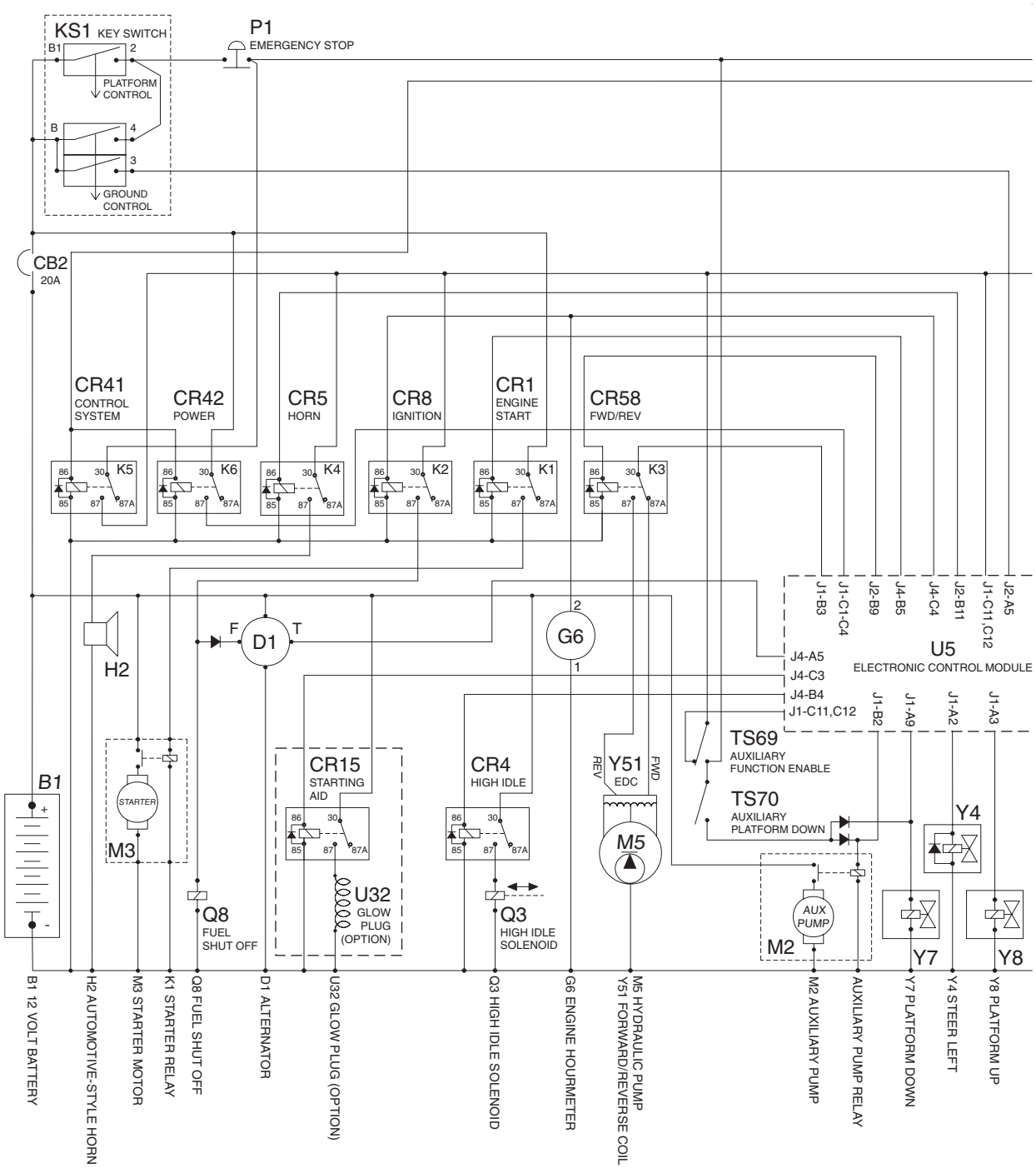
Electrical Schematic

Deutz Models (from serial number GS9003-41351 to GS9003-41522) REV A
Part 1 of 3



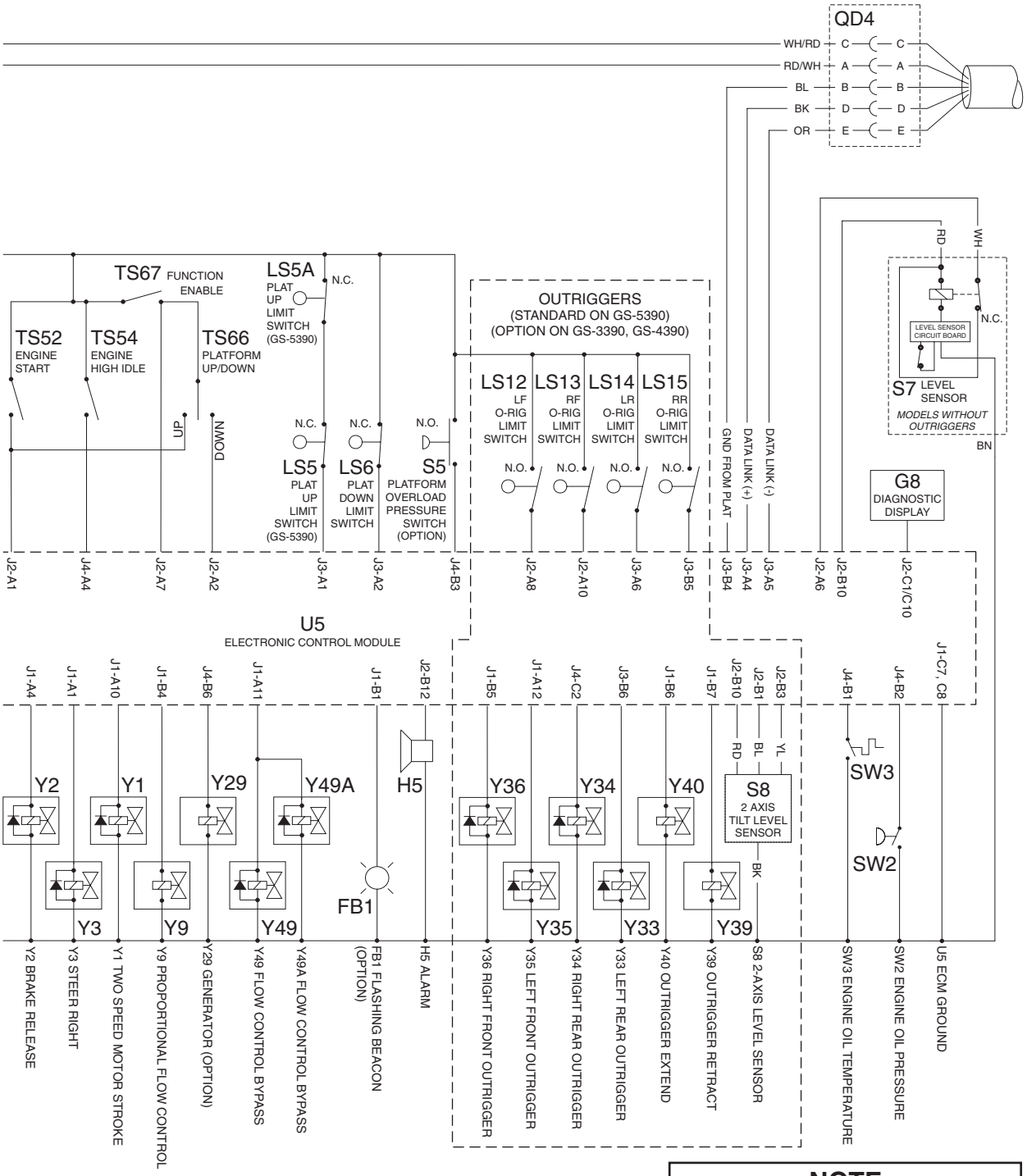
- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES7142E

Electrical Schematic

REV A

Deutz Models (from serial number GS9003-41351 to GS9003-41522)
Part 2 of 3

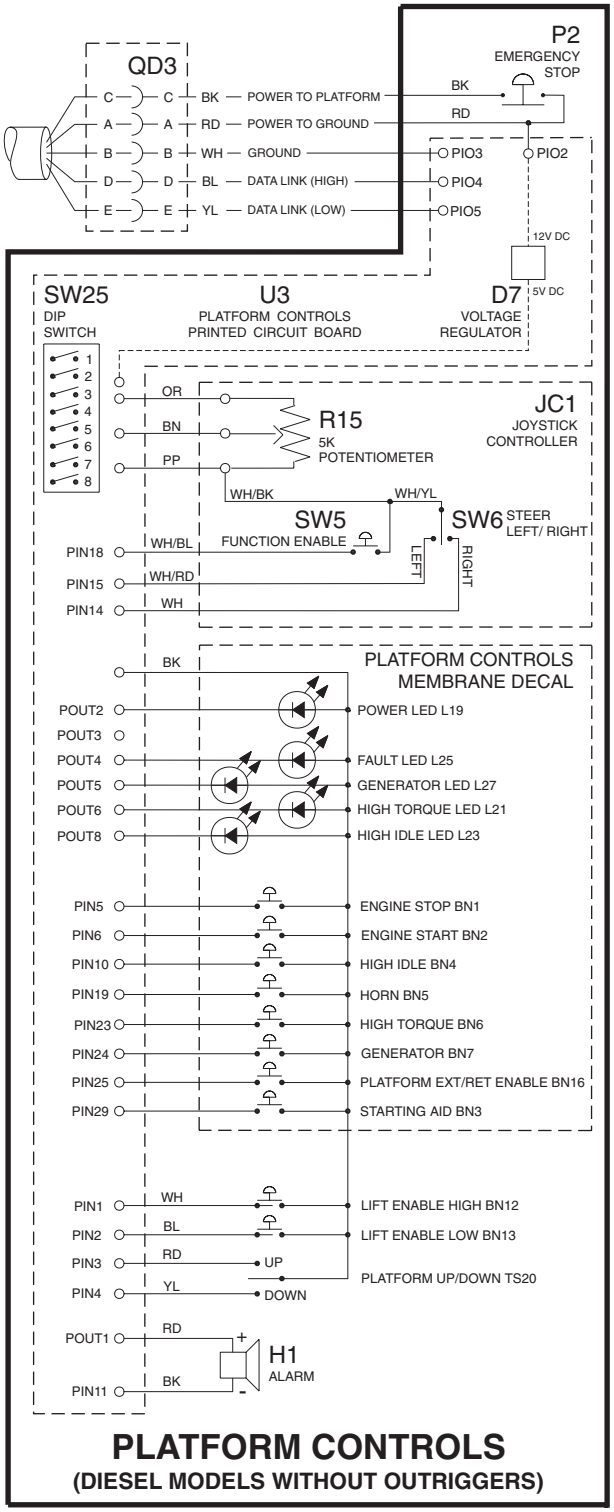


- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

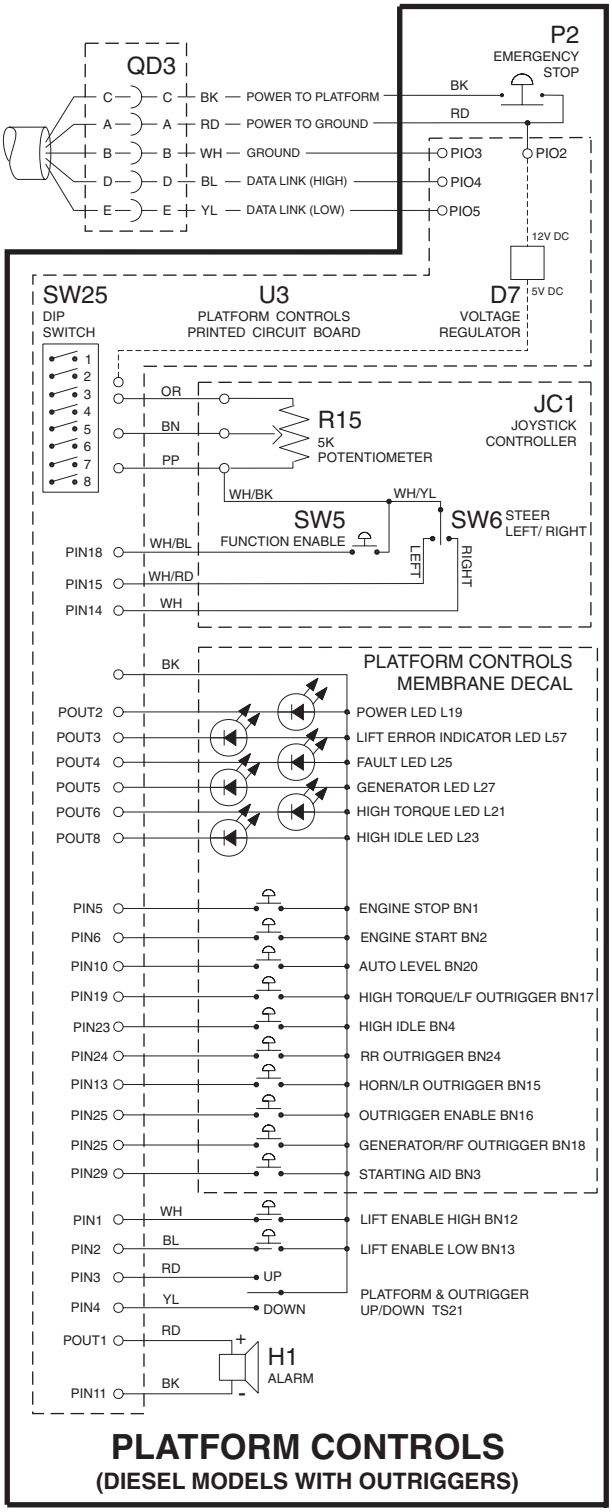
ES7142E

Electrical Schematic

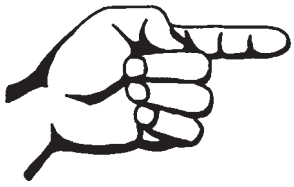
Deutz Models (from serial number GS9003-41351 to GS9003-41522) REV A
Part 3 of 3



PLATFORM CONTROLS
(DIESEL MODELS WITHOUT OUTRIGGERS)



PLATFORM CONTROLS
(DIESEL MODELS WITH OUTRIGGERS)



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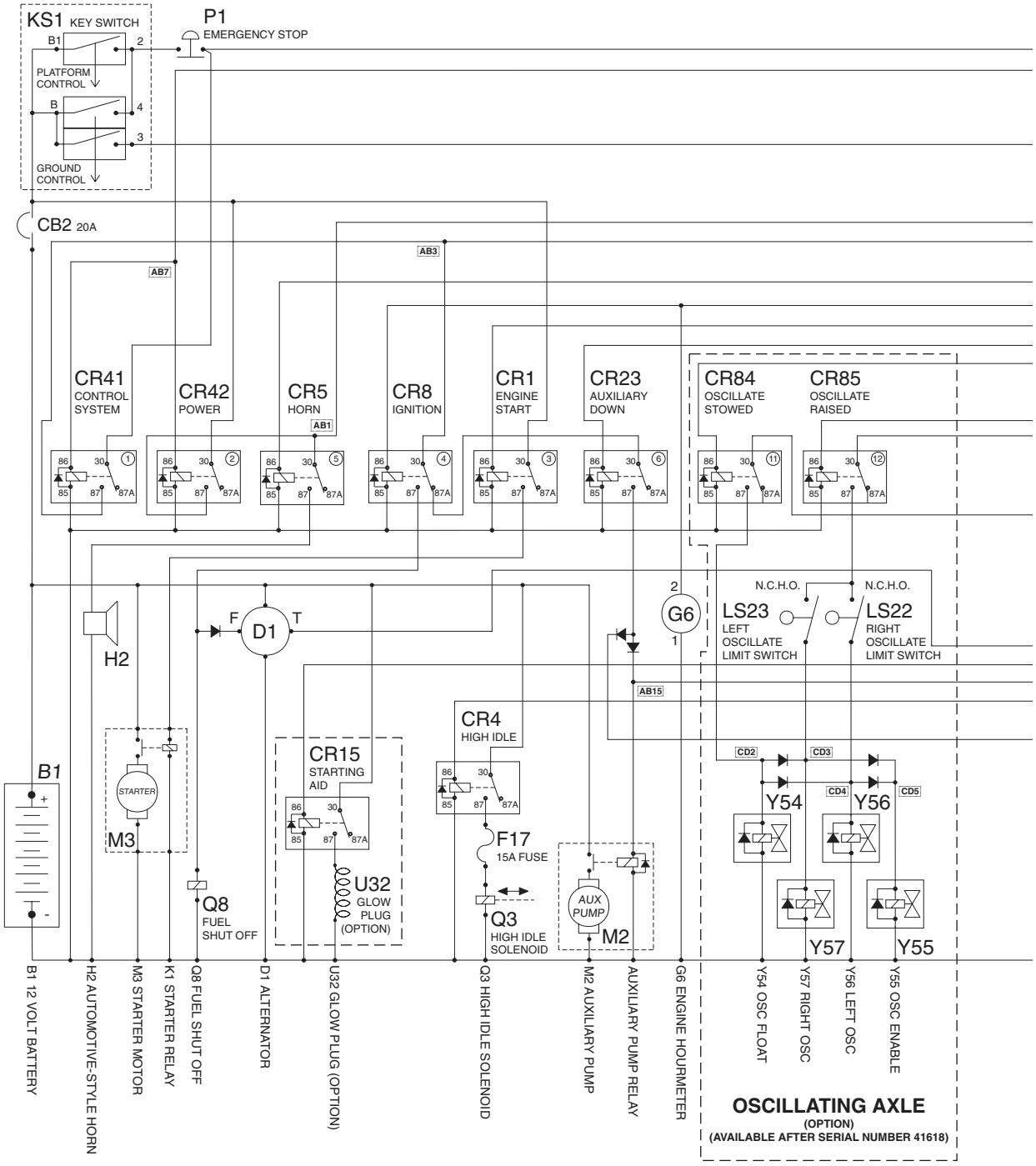
Electrical Schematic

ANSI Models with Deutz Power REV B
(from serial number GS9003-41523 to GS9005-42143)
Part 1 of 3



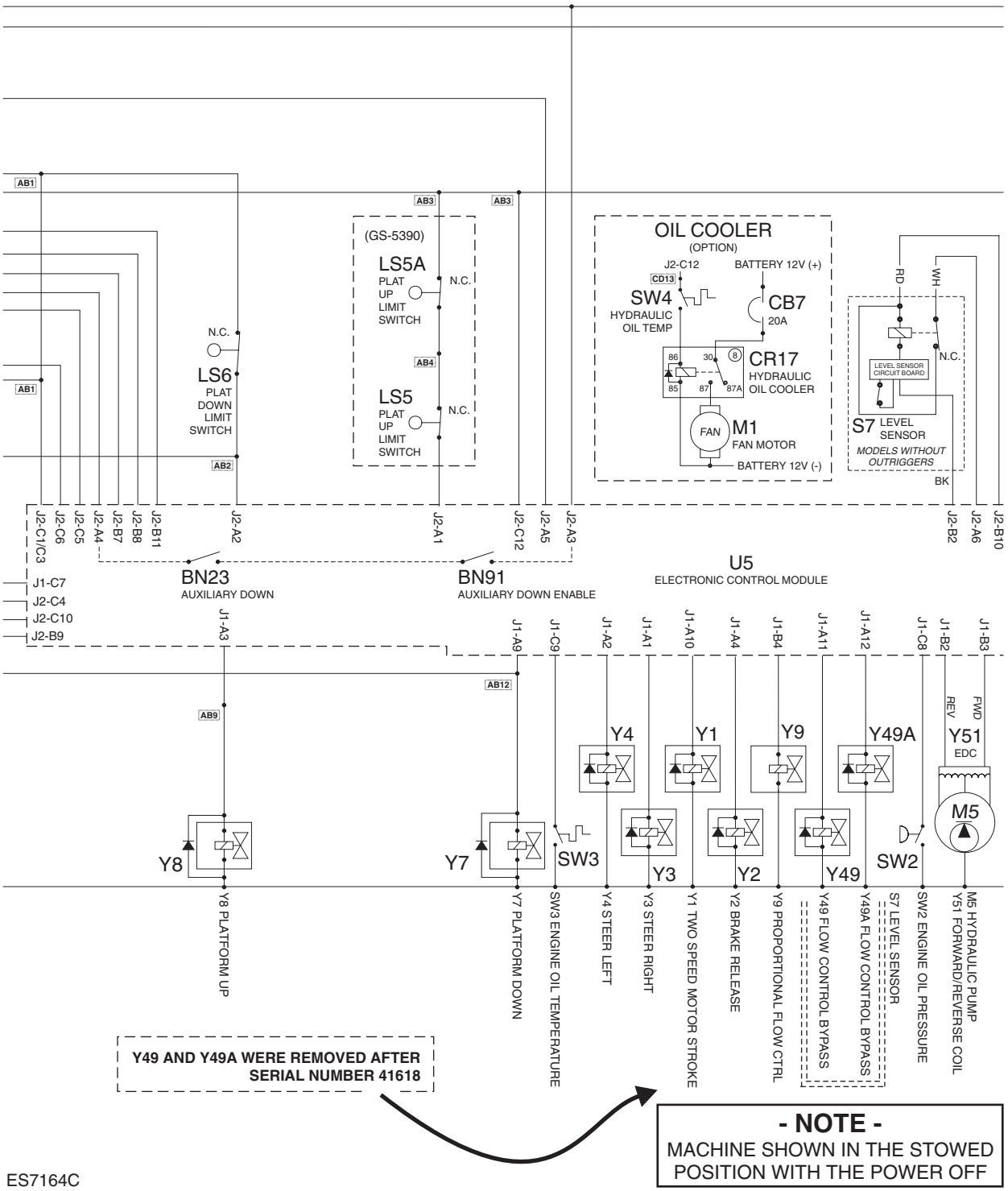
- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES7164C

Electrical Schematic

REV B

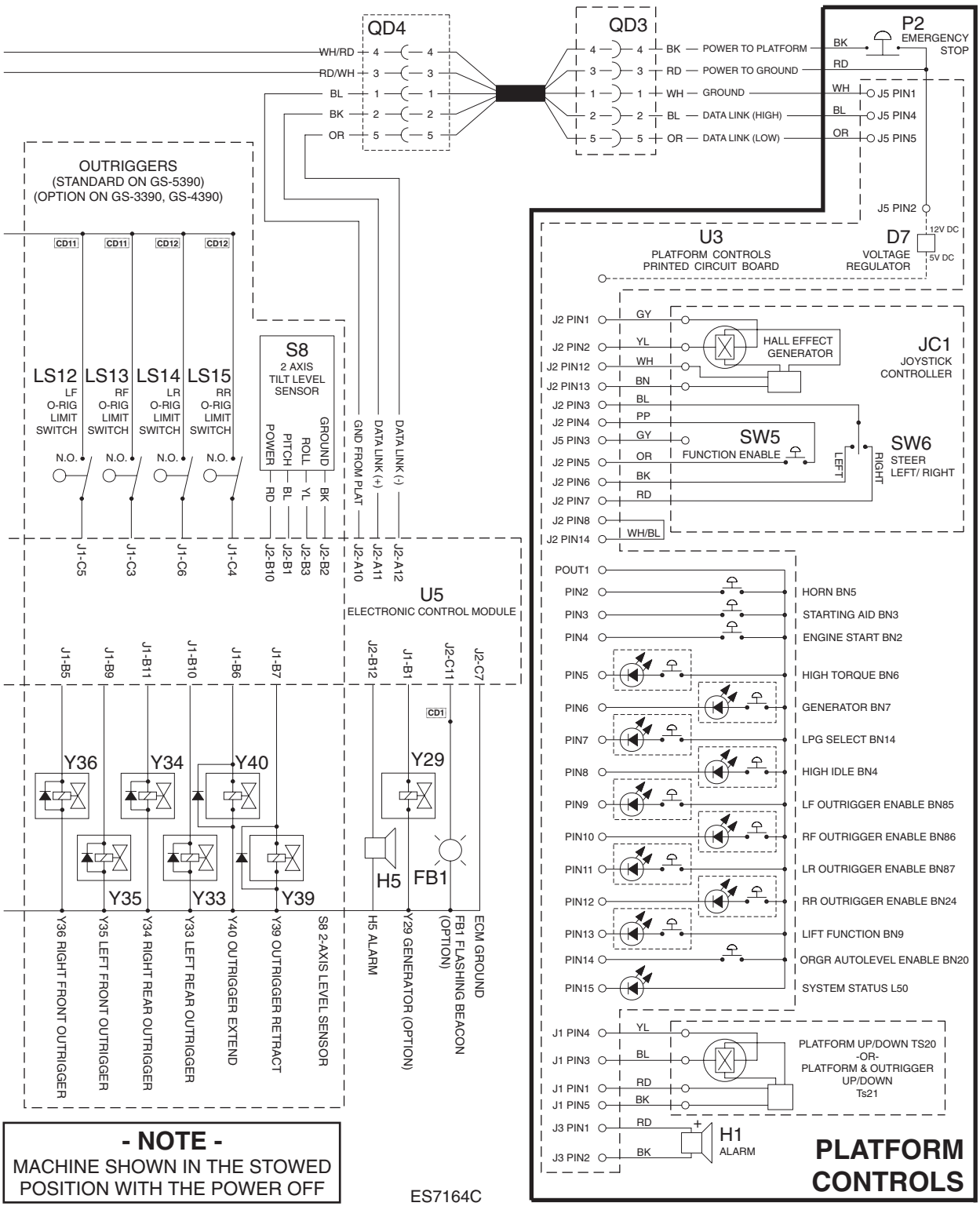
ANSI Models with Deutz Power
(from serial number GS9003-41523 to GS9005-42143)
Part 2 of 3

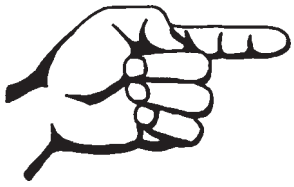


ES7164C

Electrical Schematic

ANSI Models with Deutz Power REV B
(from serial number GS9003-41523 to GS9005-42143)
Part 3 of 3





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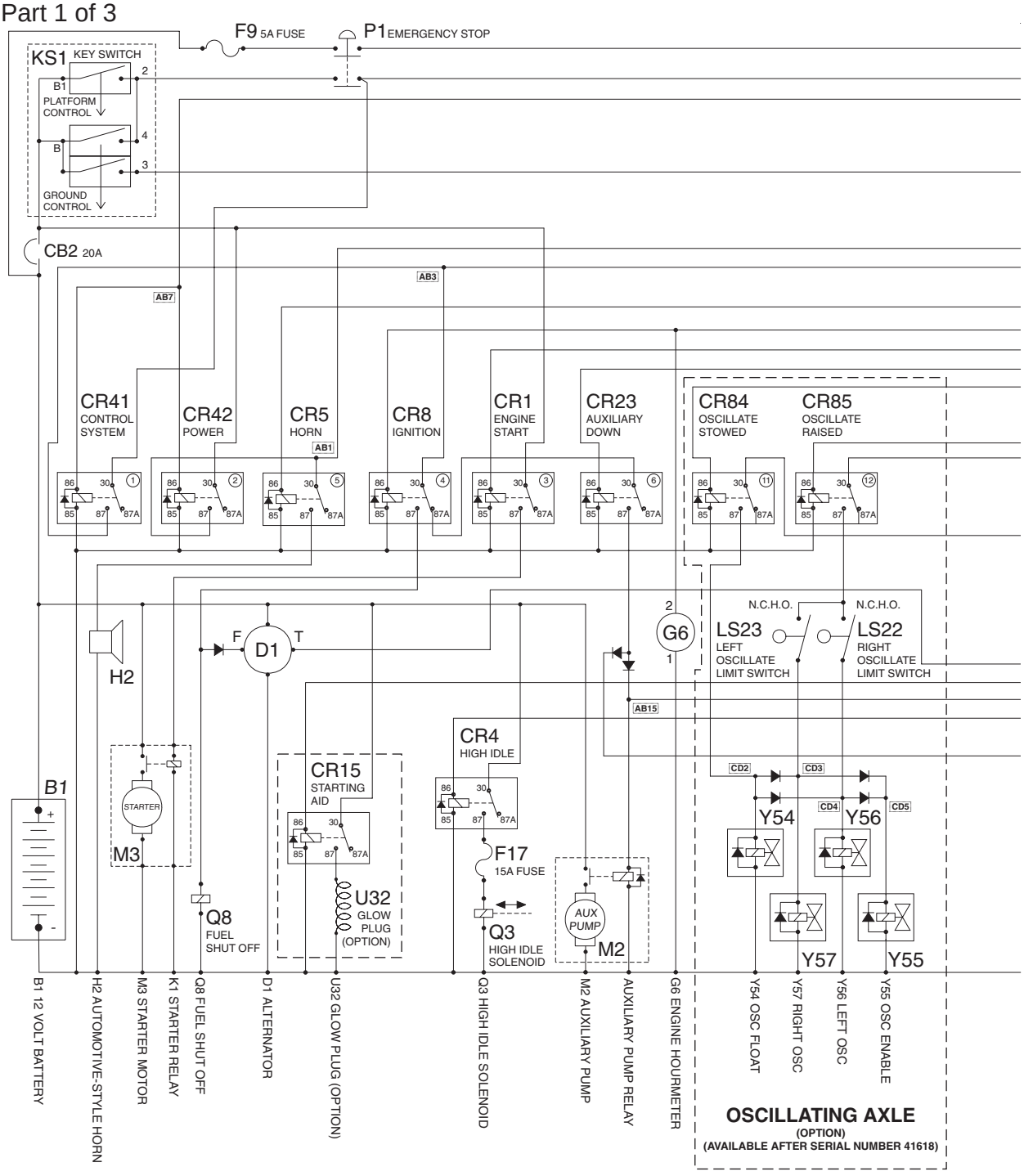
Electrical Schematic

ANSI Models with Deutz Power REV A
(after serial number GS9005-42143)
Part 1 of 3



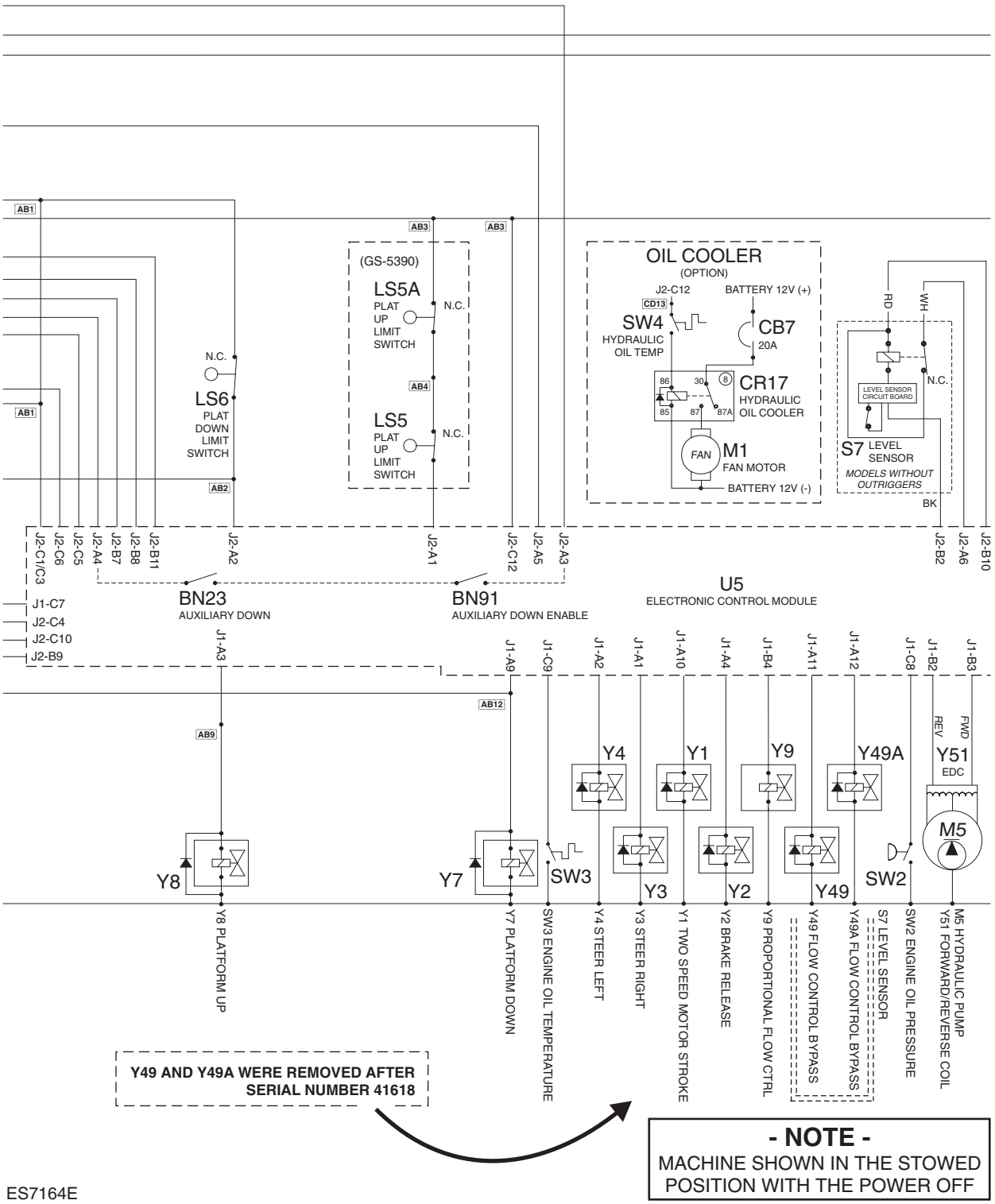
- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES7164E

Electrical Schematic

REV A

ANSI Models with Deutz Power
(after serial number GS9005-42143)
Part 2 of 3

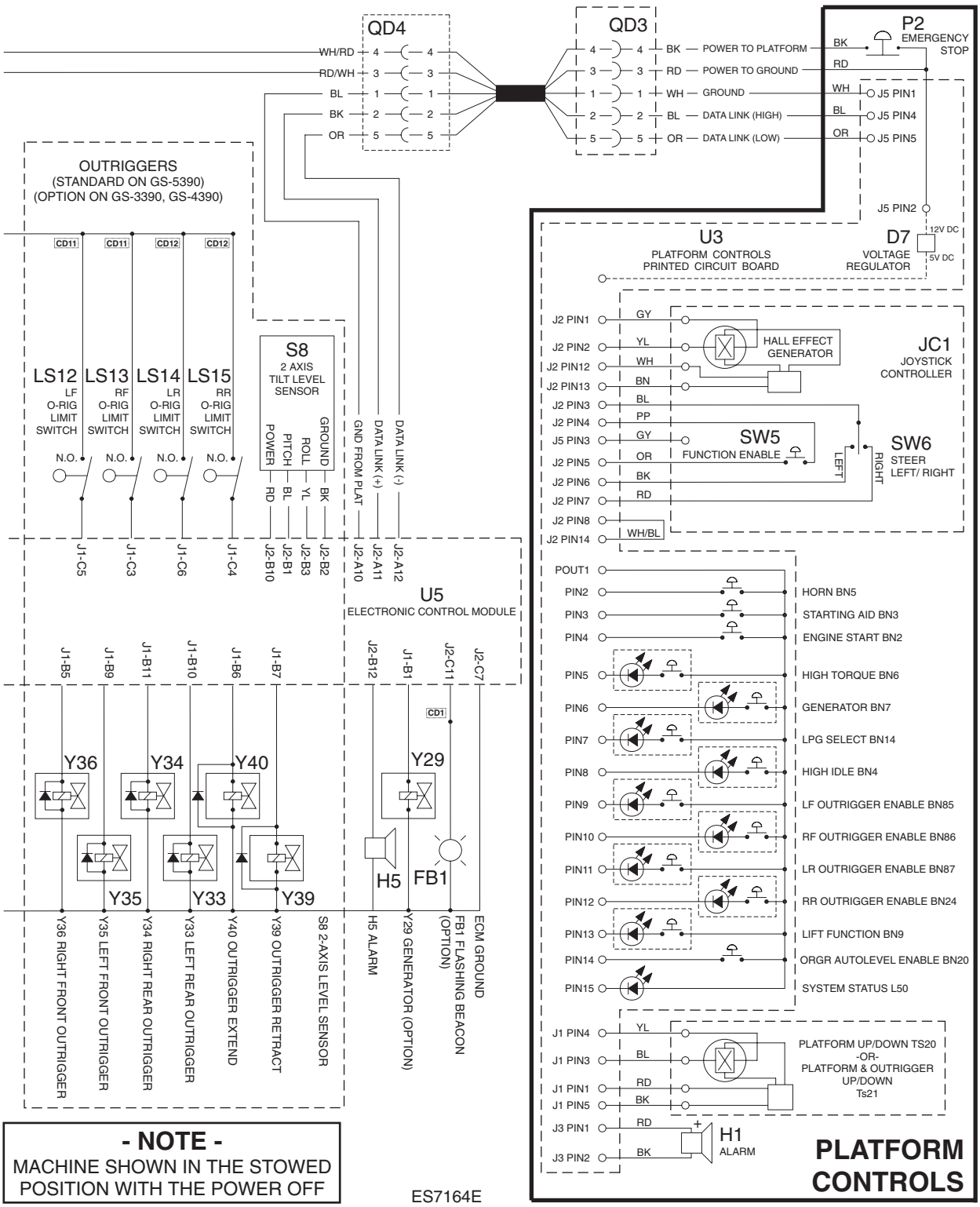


ES7164E

Electrical Schematic

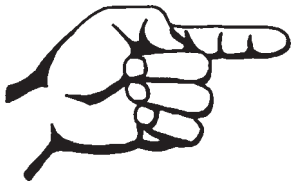
ANSI Models with Deutz Power
(after serial number GS9005-42143)
Part 3 of 3

REV A



- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES7164E



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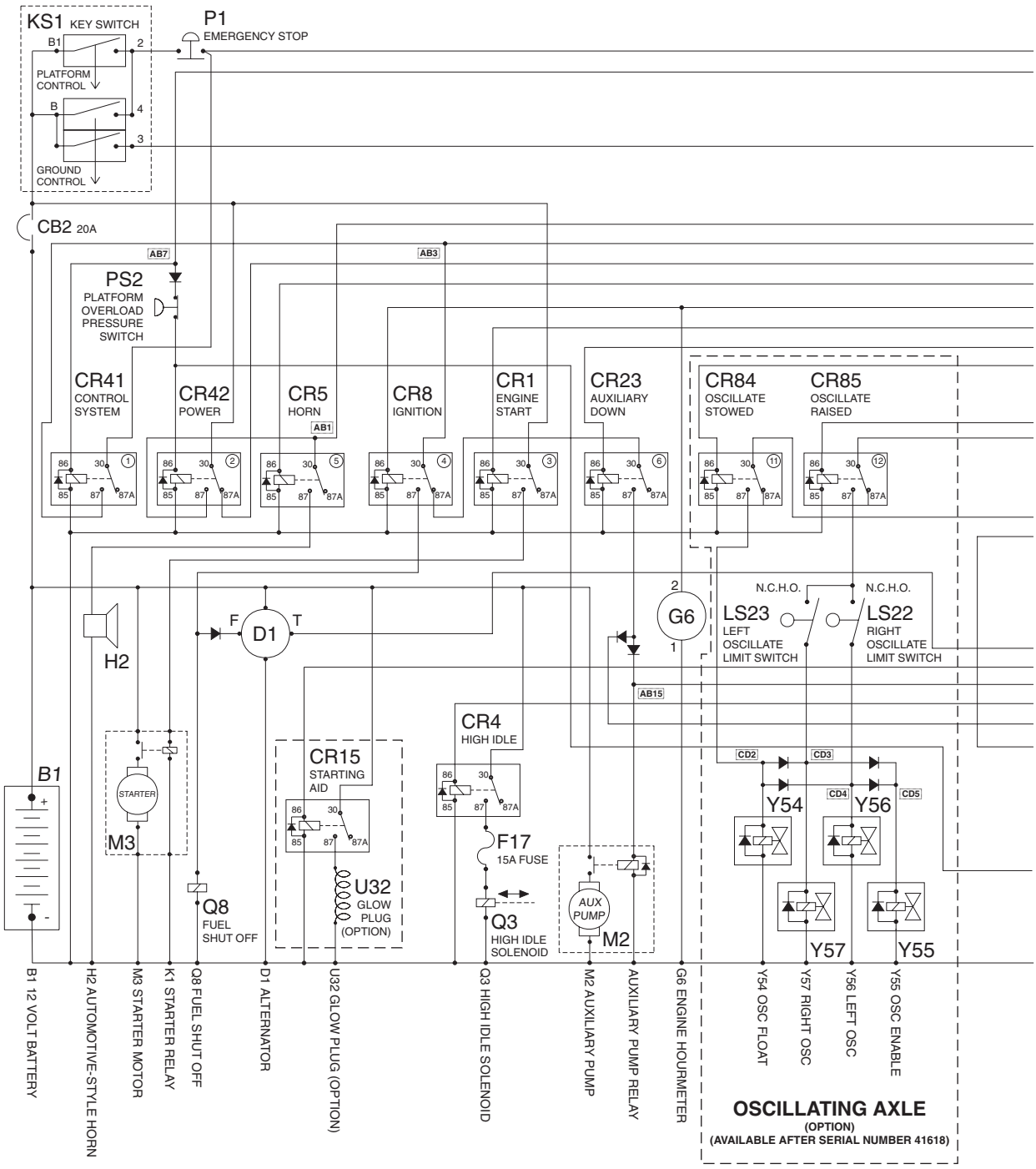
Electrical Schematic

CE Models with Deutz Power REV B
(from serial number GS9003-41523 to GS9005-42143)
Part 1 of 3



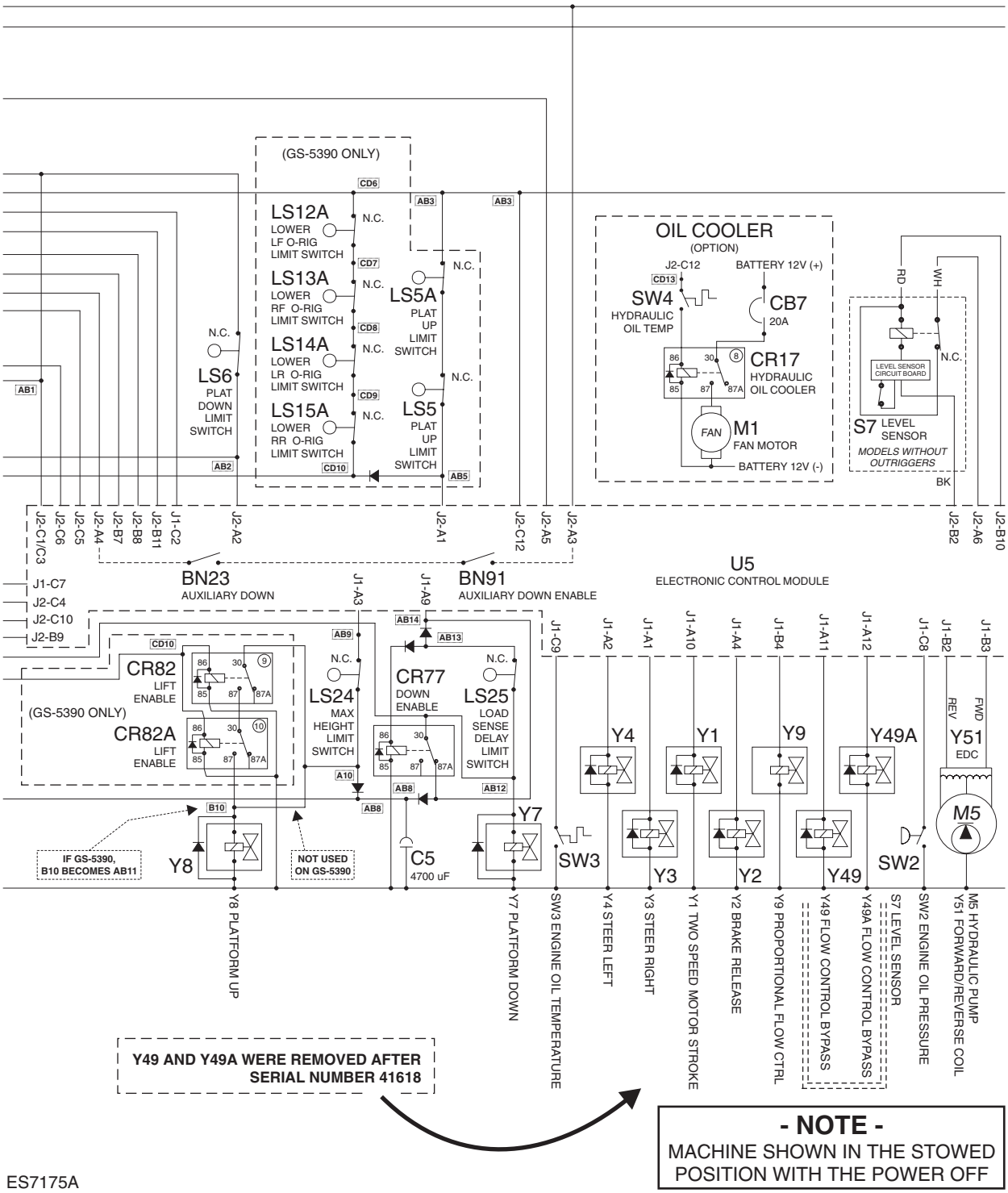
- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES7175A

Electrical Schematic

REV B

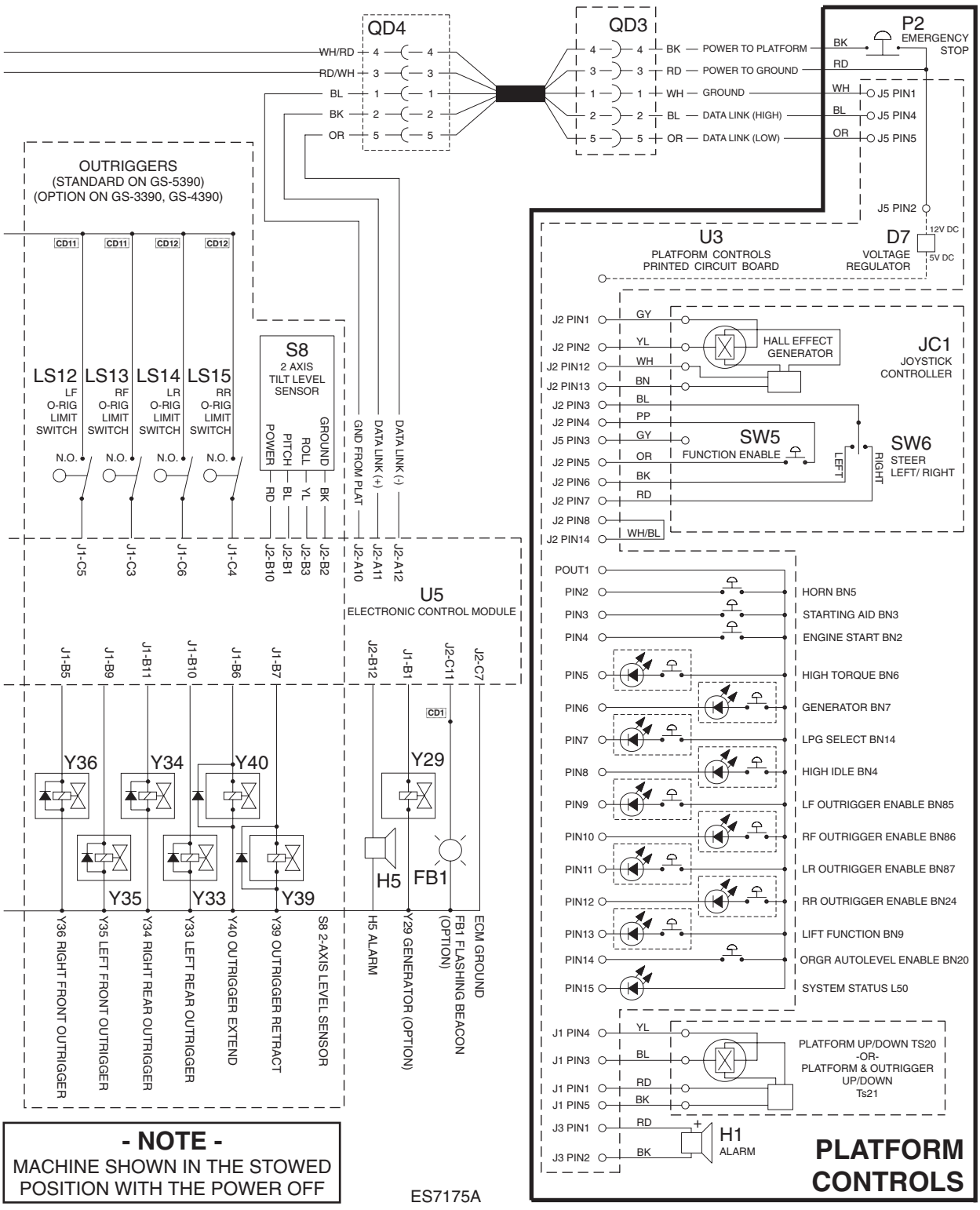
CE Models with Deutz Power
(from serial number GS9003-41523 to GS9005-42143)
Part 2 of 3



ES7175A

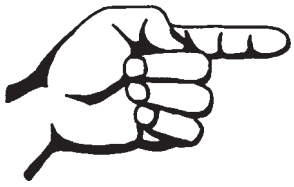
Electrical Schematic

CE Models with Deutz Power REV B
(from serial number GS9003-41523 to GS9005-42143)
Part 3 of 3



- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES7175A



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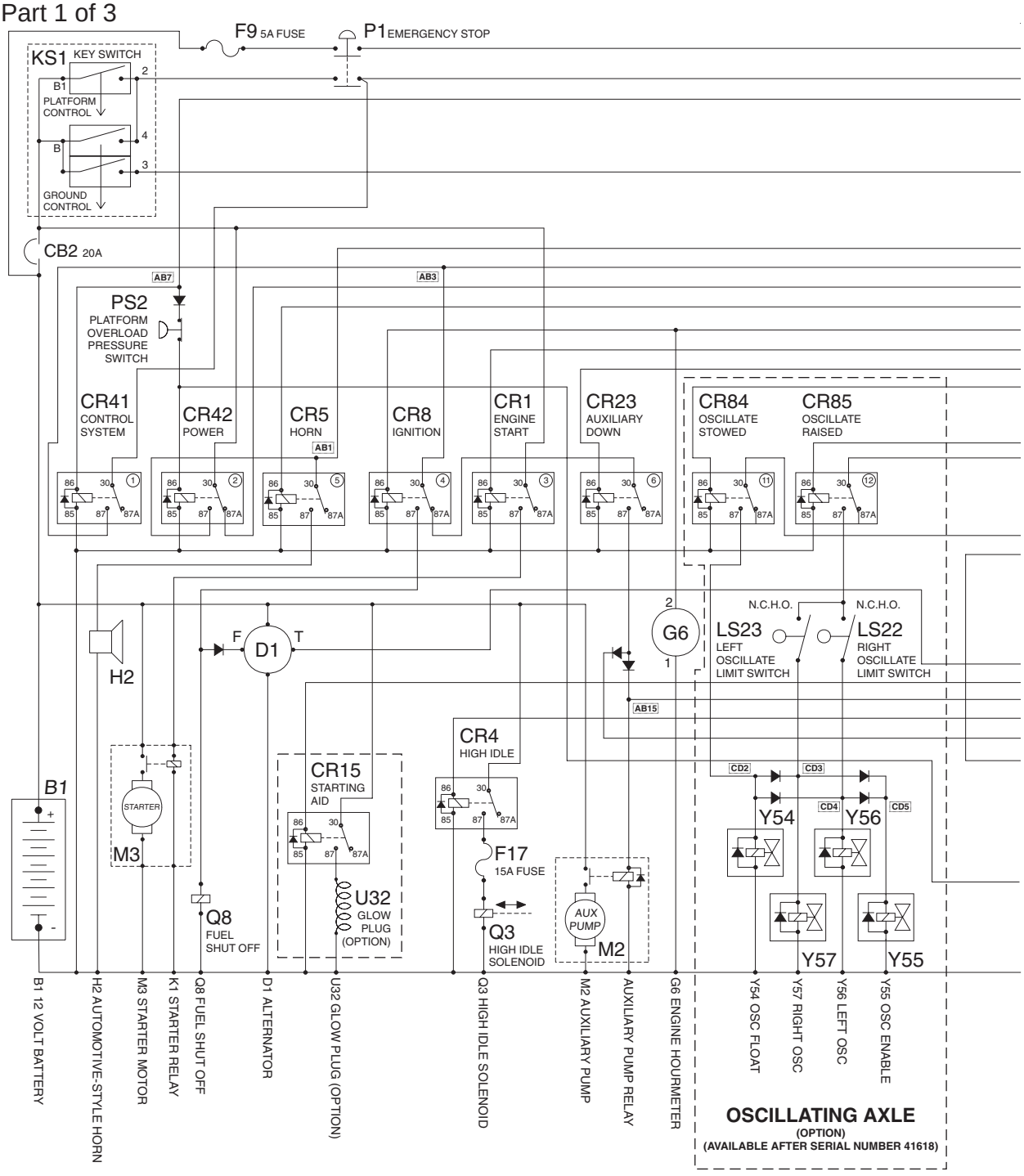
Electrical Schematic

CE Models with Deutz Power REV A
(after serial number GS9005-42143)
Part 1 of 3



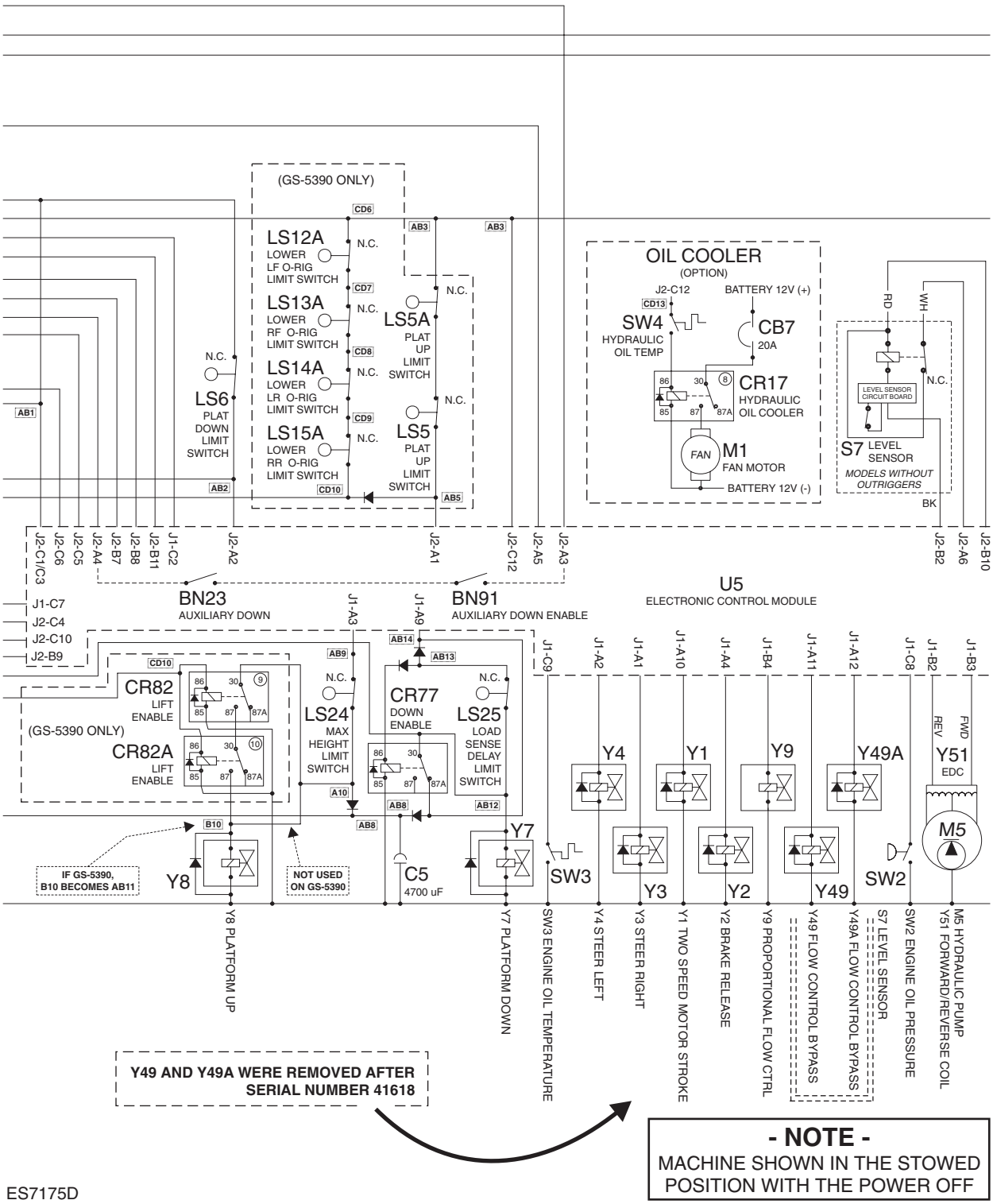
- NOTE -
MACHINE SHOWN IN THE STOWED POSITION WITH THE POWER OFF

ES7175D

Electrical Schematic

REV A

CE Models with Deutz Power
(after serial number GS9005-42143)
Part 2 of 3

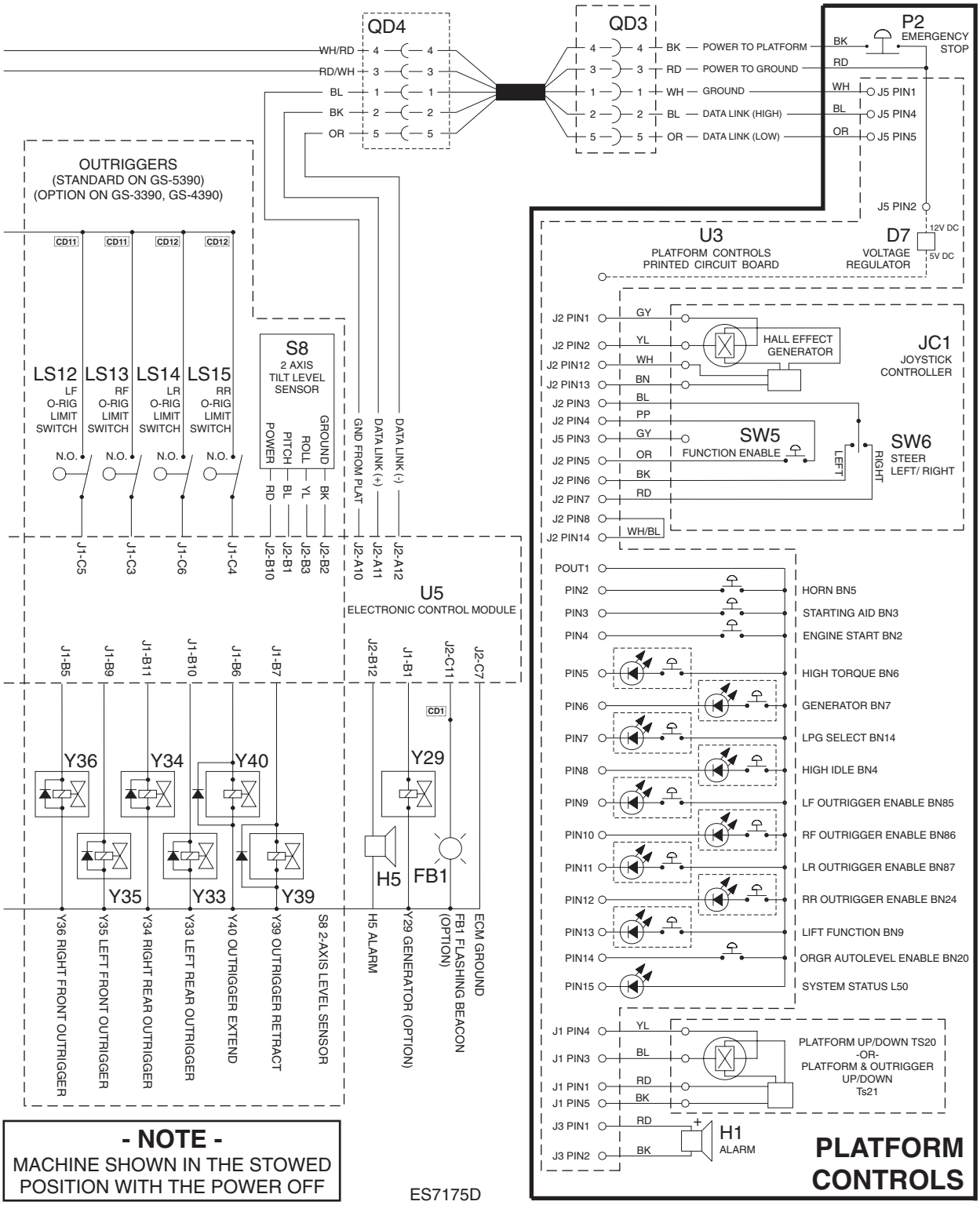


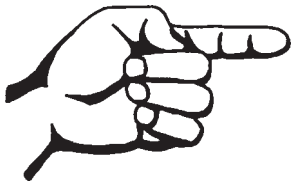
ES7175D

Electrical Schematic

CE Models with Deutz Power
(after serial number GS9005-42143)
Part 3 of 3

REV A





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Hydraulic Schematics Component Call-out Legend

REV A

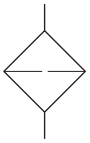
HYDRAULIC COMPONENT LEGEND	
Item	**Function**
A	Steer circuit
B	Auxiliary pump circuit
C	Steer circuit
D	System relief
E	Steer/outrigger circuit
F	Test port
G	Steer left/right
H	All functions
I	Platform up/down
J	Outrigger up/down
K	Outrigger extend circuit
L	Outrigger retract circuit
AA	Platform down circuit
AB	Testing
AC	System relief
AD	Proportional/differential sensing valve
AE	Steering and outrigger circuit
AF	Testing
AG	Platform up/down
AH	Steer left/right
AI	Platform down circuit
AJ	Bleeds off proportional valve to tank
AK	Outrigger up/down
AL	Generator on
AM	Generator relief
AN	Generator flow
AO	Accumulator
AP	Platform overload (option)

HYDRAULIC COMPONENT LEGEND	
Item	**Function**
BA	High speed bypass
BB	High speed bypass
BC	Balances fluid flow from flow divider/combiner BO to non-steer end drive motors
BD	Balances fluid flow from flow divider/combiner BP to steer end drive motors
BE	Charge pressure circuit that gets hot oil out of low pressure side of drive pump and allows low pressure flow path for brake release and 2-motor shift
BF	Testing “P1” pressure port
BG	Testing “P2” pressure port
BH	Charge pressure circuit
BI	Brake release circuit
BJ	2-speed motor shift circuit
BK	Brake release circuit
BL	2-speed motor shift circuit
BM	2-speed motor shift circuit
BN	Balances fluid flow from flow divider/combiner valve BM to flow divider/combiner valves BO and BP
BO	Controls flow to non-steer end drive motors in forward and reverse
BP	Controls flow to steer end drive motors in forward and reverse
BQ	Controls fluid flow to flow divider/combiner valves BO and BP in forward and reverse

HYDRAULIC COMPONENT LEGEND	
Item	**Function**
CA	Right front outrigger autolevel valve
CB	Left front outrigger autolevel valve
CC	Right rear outrigger autolevel valve
CD	Left rear outrigger autolevel valve
DA	Oscillate on
DB	Oscillate system relief valve
DC	Oscillate float relief valve
DD	Flow regulator
DE	Right oscillate cylinder
DF	Left oscillate cylinder
DG	Oscillate float
EA	Flow divider/combiner, front to rear
EB	Orifice, controls flow side to side at steer end
EC	Test port #2
ED	Orifice, controls flow side to side at non-steer end
EE	Charge pressure circuit
EF	2-speed motor shift circuit
EG	Orifice, brake circuit
EH	Orifice, 2-speed motor shift circuit
EI	Hot oil relief, charge pressure circuit
EJ	Brake release circuit
EK	Flow divider/combiner, balances flow side to side at the non-steer end
EL	Flow divider/combiner, balances flow side to side at the steer end
EM	Orifice, controls flow front to rear
EN	Test port #1

Hydraulic Symbols Legend

REV A

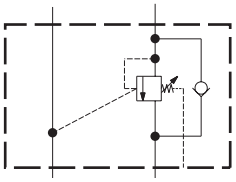


Filter

Fixed displacement pump

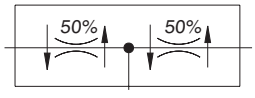
Bi-directional variable speed motor

Variable speed motor

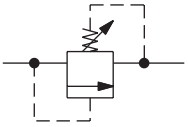


Counterbalance valve

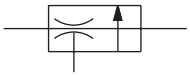
Flow regulator valve



Flow divider/combiner valve



Relief valve



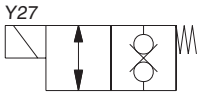
Priority flow regulator

Accumulator

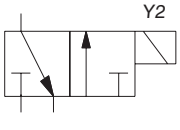
Orifice

Shut off valve

Dual acting cylinder



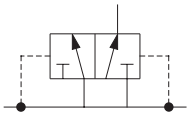
Solenoid operated 2 position 2 way valve, normally closed with manual over-ride



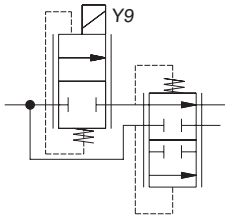
Solenoid operated 2 position 3 way directional valve

Brake

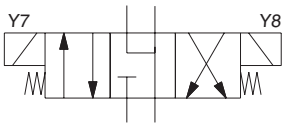
Check valve



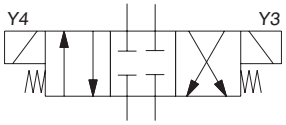
Hot oil shuttle valve



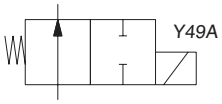
Proportional solenoid valve



Solenoid operated 3 position 4 way directional valve



Solenoid operated 3 position 4 way directional valve

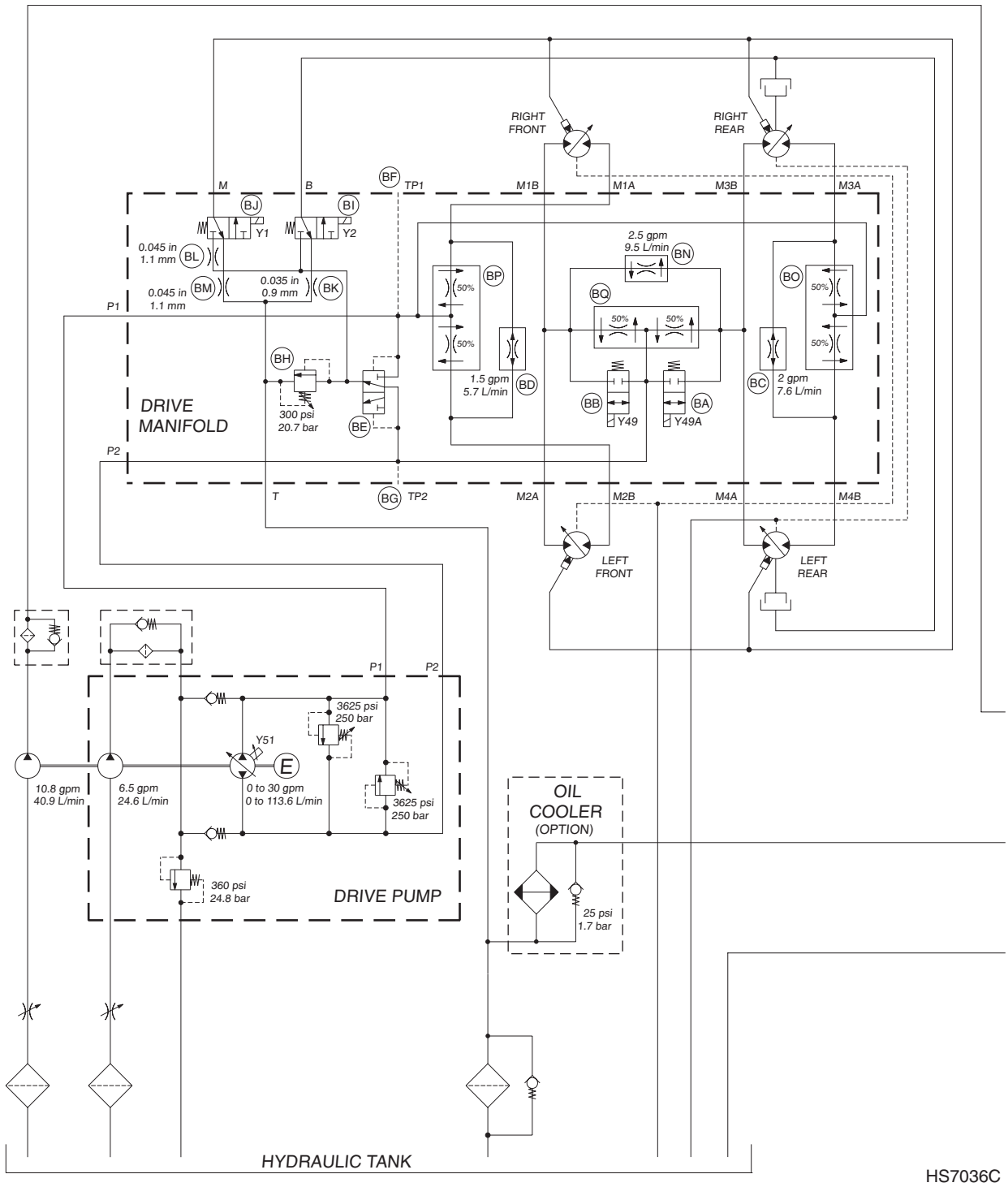


Solenoid operated 2 position 2 way directional valve

Hydraulic Schematic

(before serial number 40519) REV D

Part 1 of 2

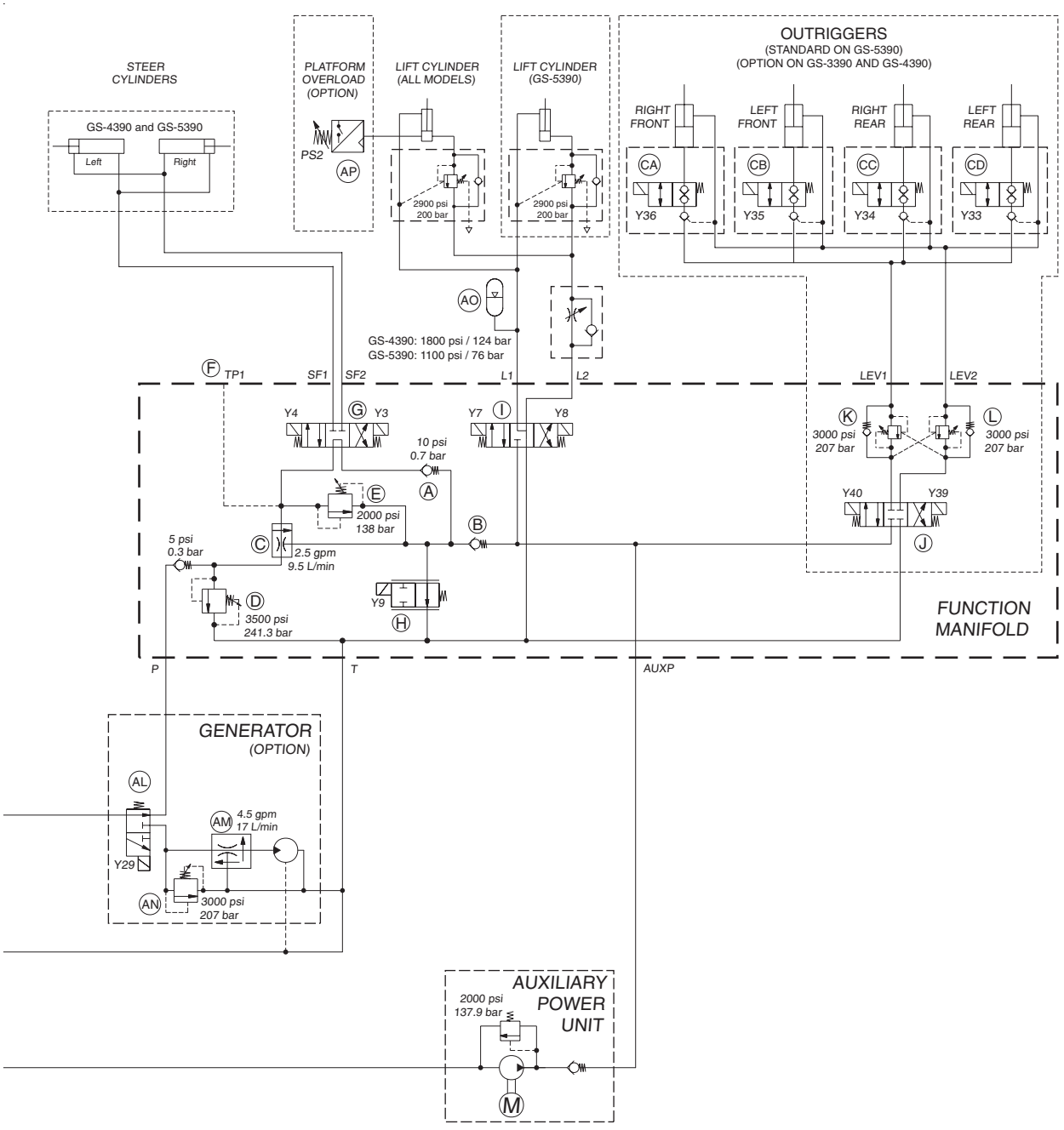


HS7036C

Hydraulic Schematic

REV D

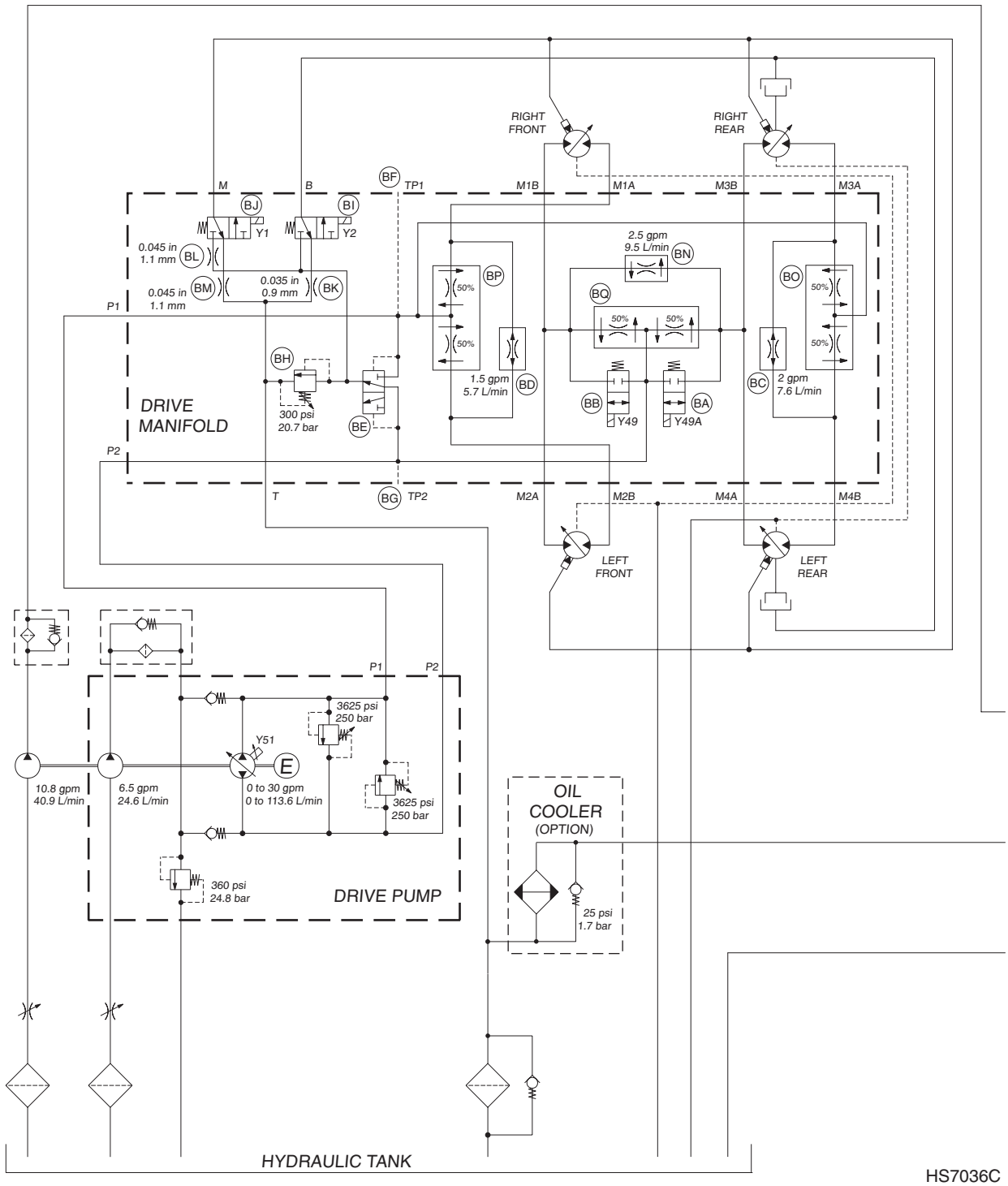
(before serial number 40519)
Part 2 of 2



HS7037B

Hydraulic Schematic

(from serial number 40519 to GS9004-41618) REV G
Part 1 of 2

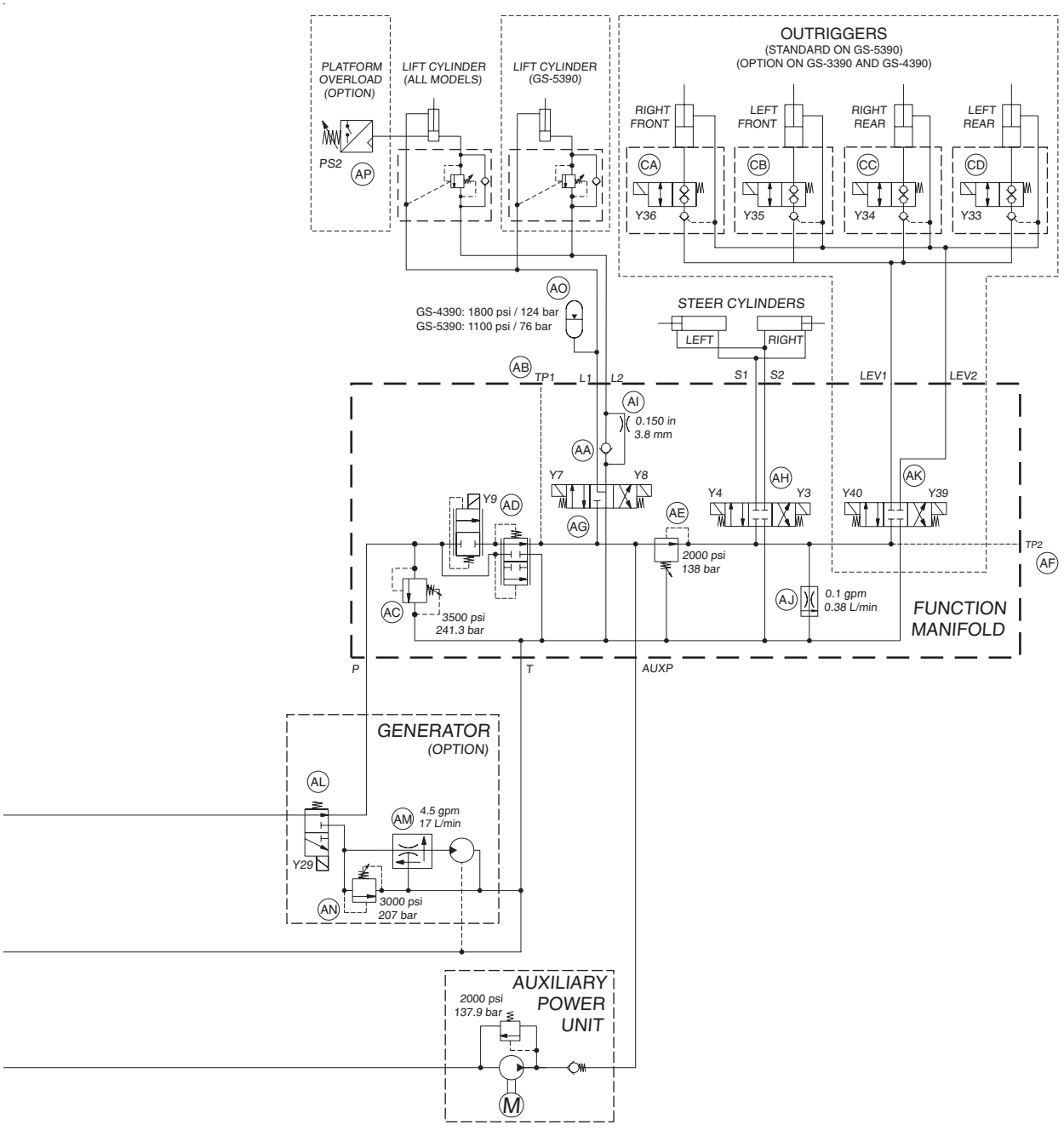


HS7036C

Hydraulic Schematic

REV G

(from serial number 40519 to GS9004-41618)
Part 2 of 2

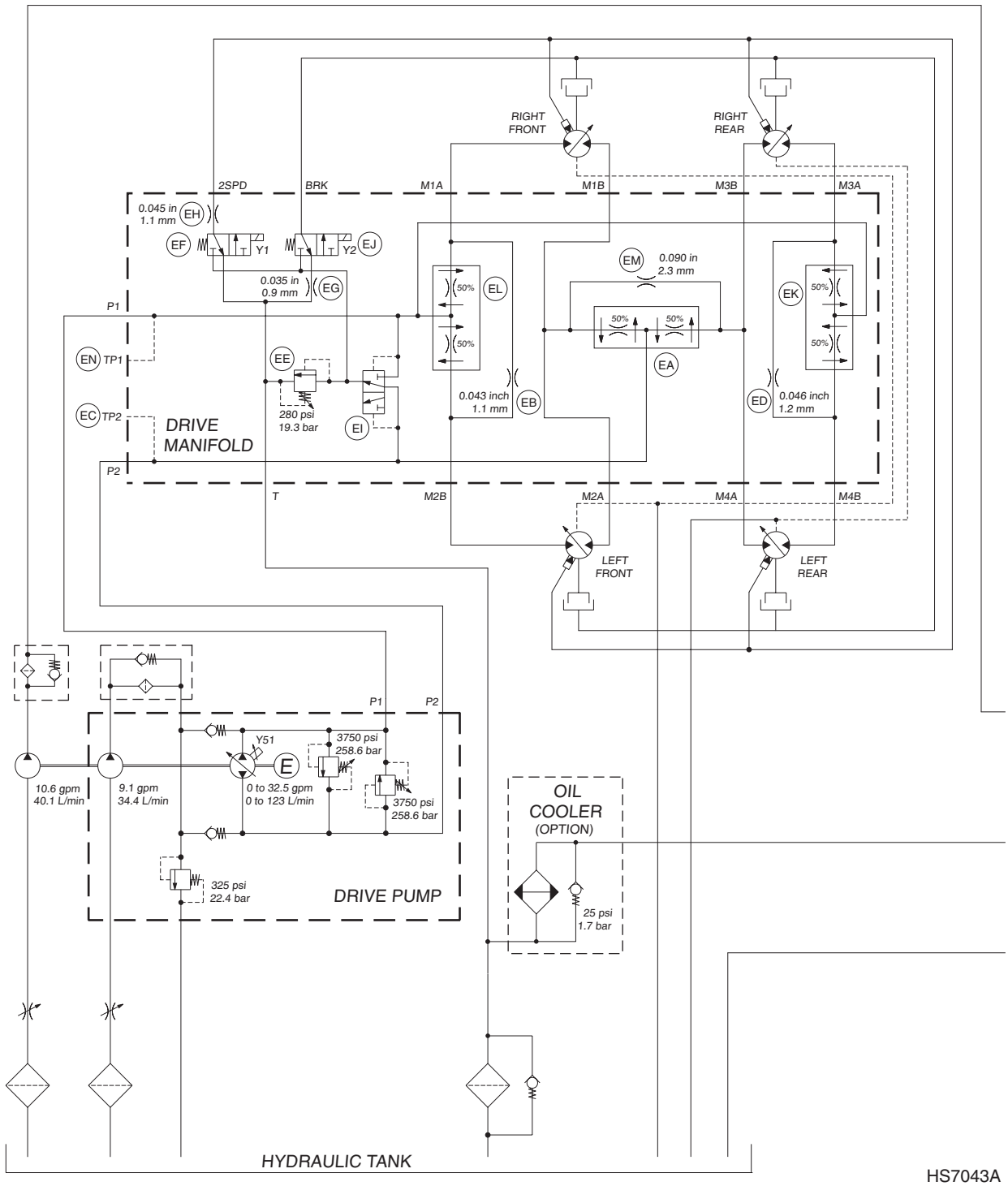


HS7037J

Hydraulic Schematic

(after serial number GS9004-41618) REV B

Part 1 of 2

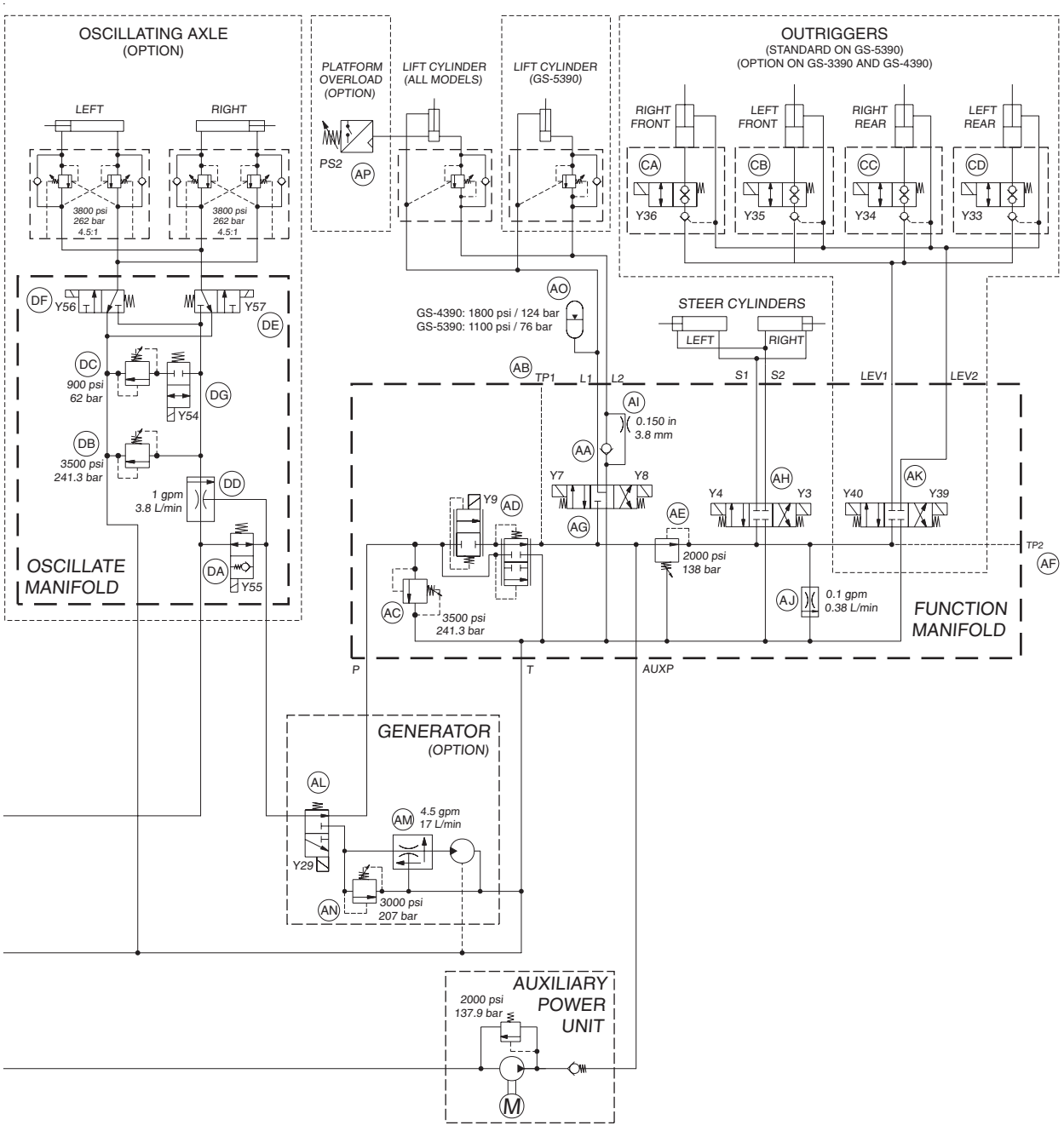


HS7043A

Hydraulic Schematic

REV B

(after serial number GS9004-41618)
Part 2 of 2



HS7037J

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California Proposition 65

WARNING

The exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

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Service Manual GS-3390 & GS-4390 & GS-5390

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